MIDWEST SUPER CUB™

Celebrating pulling friends and family together for 20 years!

20th Anniversary Edition

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How to Make a Return:
If you are not completely satisfied, return the new/unused item in the original box prepaid within 30 days with a copy of the invoice for a refund/exchange. Send the package pre-paid UPS, Fed Ex or USPS Insured to Midwest Super Cub, 333 Welton Ave, P.O. Box 10, Welton, IA 52774. No COD or Freight collect ship ments will be accepted. Credits will be issued after we see the part and its condition and only issued for the mer chandise only, no refunds on handling/shipping charges. There is a **20% RESTOCKING FEE** on all returned items. **NO EXCEPTIONS**.
Warranty: The warranty from the various manufacturers differ and all claims will be handled by the manufacturer of the item in question. Since these are high performance parts under extreme use conditions, there is no warranty on most parts. If there is a problem call us first. Warranty Disclaimer: Purchasers understand and recognize that racing parts, specialized tractor pulling and racing equipment and all other parts and services sold by Midwest Super Cub, LLC (MWSC) are exposed to many and varied conditions due to the manner in which they are installed and used. Except for certain limited warranties, if any set forth in the MWSC current catalog, including the MWSC website with respect to the products and/or parts thereof identified on your invoice, each product and each part thereof is sold 'as is" and "with all faults" and MWSC makes no warranties either expressed or implied, written or oral, with regard to such products and service including, without limitation, any warranty of merchantability or fitness for particular purpose. Without limiting the foregoing, there is no warranty expressed or implied as to whether the goods sold hereby will protect purchasers or ultimate end-user of such products and parts from injury or death. In no event shall MWSC be liable for any special incidental or consequential damages, or any other damages whatsoever arising out of or connected with the use or misuse of the products and each part thereof. Purchasers acknowledge and agree that no person, entity or agent of MWSC has any authority to make any statement contrary to this disclaimer and that any warranty statements or representations allegedly made on behalf of MWSC by any such person, entity or agent are void. Purchasers are relying solely on their own skill and judgment to select the purchase and use suitable products and assume all responsibility and risk with regard thereto. The use of manufacturers' names and symbols are for reference purposes only.
Sales Tax: Applicable 7% sales tax is collected on sales in IA If the parts are for resale a sales tax permit number is required for IA purchases.

Sales team (pictured left) from left to right: Cathy, Rochelle, Jennie, and Shannon

Midwest Machine, Inc.

Most items for sale by Midwest Super Cub are manufactured in house in their very own 10,000 sq. ft. manufacturing facility. The facility is a fully-equipped machine shop featuring: 3 CNC machining centers, 2 CNC turning centers, a 5-axis CNC Flow Water Jet cutting table, an automatic band saw and a fully computerized dynamometer. That's not all! Midwest Machine is also equipped with the following tools: a Winnona/ Van Norman crankshaft grinder, a Super Flow flow bench a (to flow carburetors and OHV cylinder heads) , and Micro Super Finish process for our gears and other items. Additional cutting-edge machines include: a Stuska Computer Dyno, a surface grinder and Pro Engineer (Pro-E) 3D Design CAD software with a 5 axis CAM output. MasterCam and Audie Tech Cam-Pro.

Driving directions: Midwest Super Cub LLC and Midwest Machine INC. are located approximately 20 miles north of I-80 on Hwy 61. Turn left at 260th Ave, left at stop sign, and left on Welton Ave.

306 & 333 Welton Ave.,
Welton, IA, 52774

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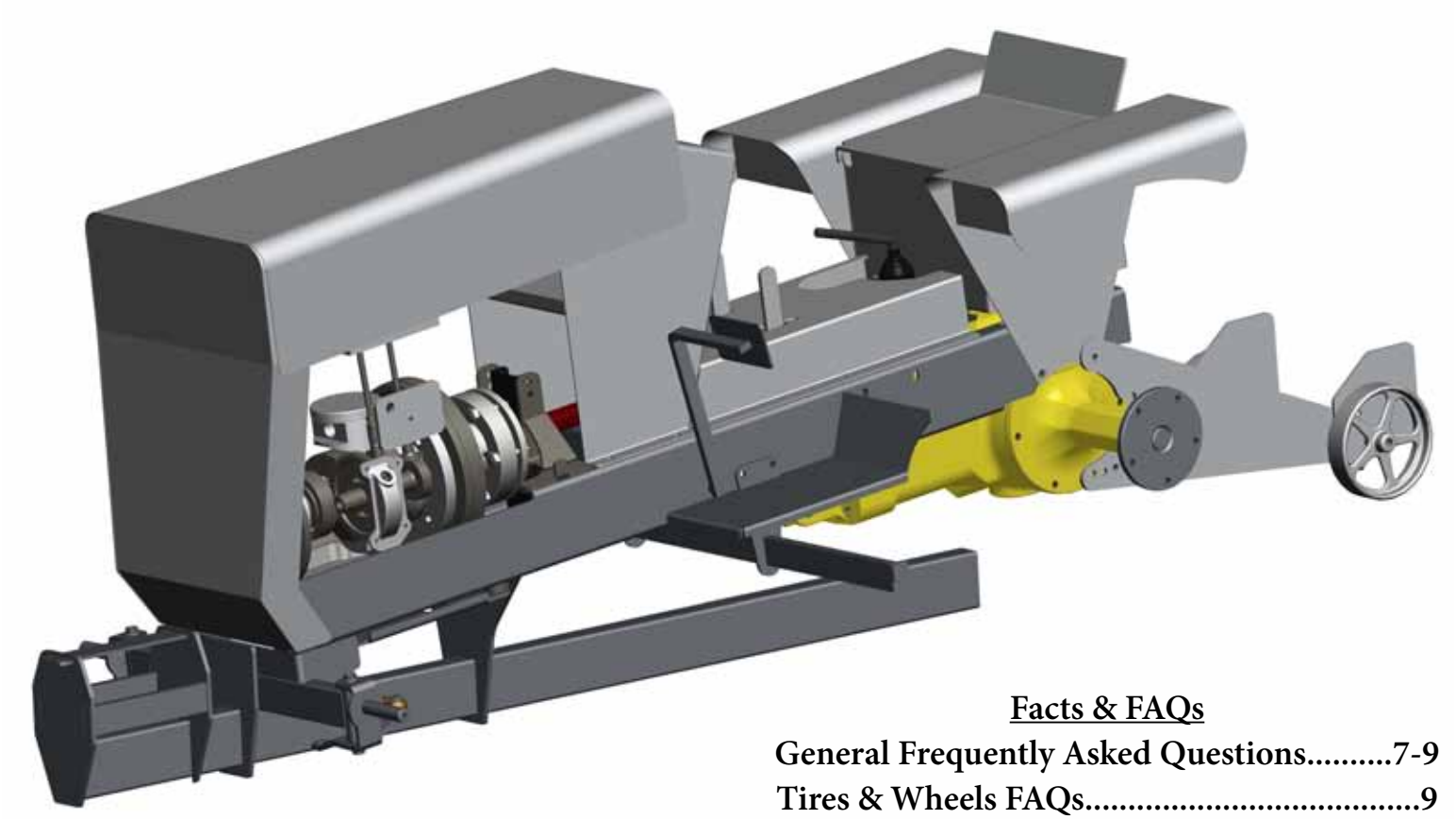

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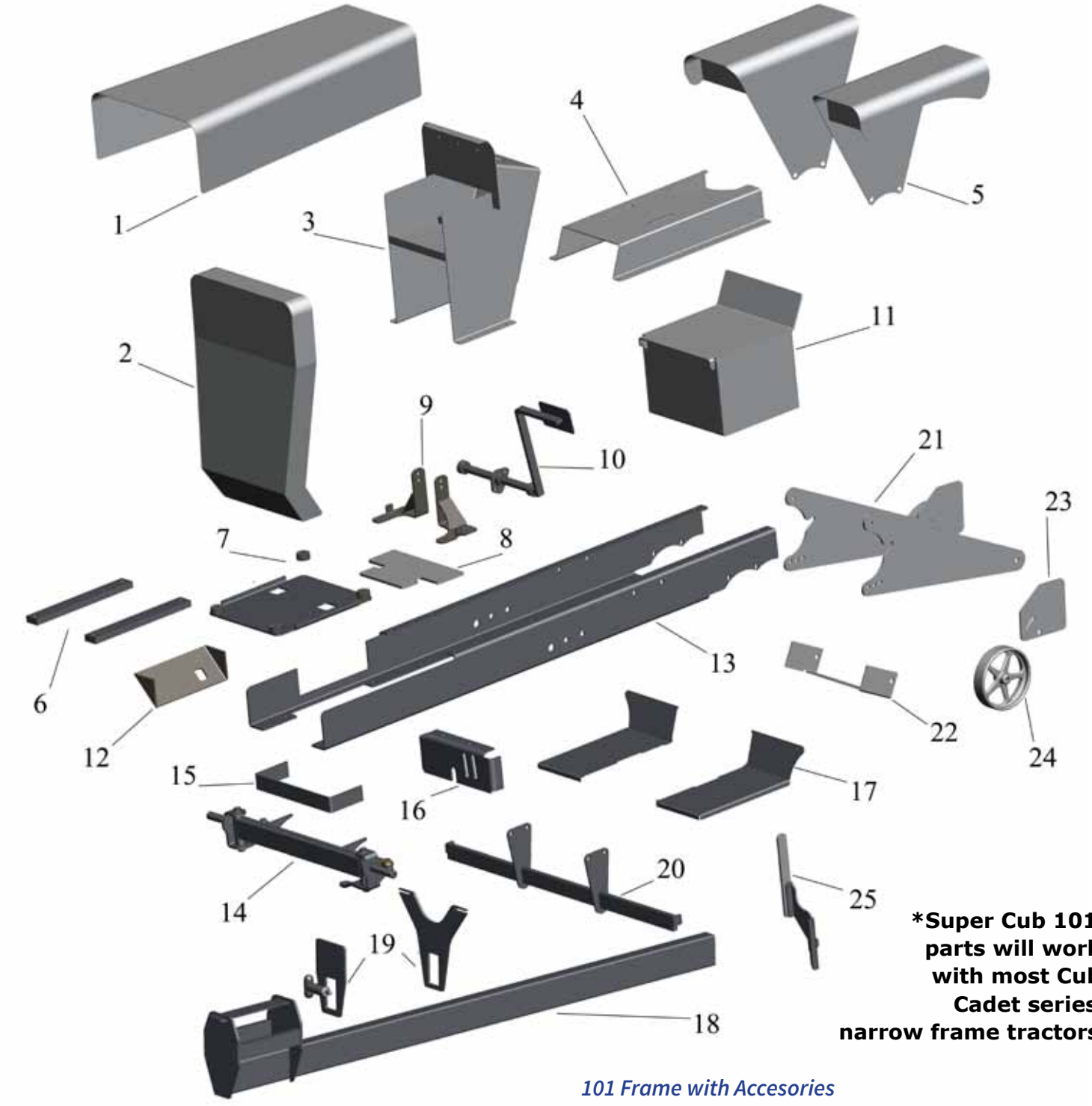


***Super Cub 101 parts will work with most Cub Cadet series narrow frame tractors.**

Welded Frame for Super Cub 101

Includes: #13, 14, 15, 16, 17, and 19. ***Engine plate NOT included.***

Frame Welded.....$899.35

101 Frame with Accesories

Includes: welded frame (13, 14, 15, 16, 17, and 19), 1, 2, 3, 4, 5, 9, 10, 11, 18, 20, 25, and 3 puck complete clutch (see page 11). Also includes freight shipping to the Fedex terminal closest to the customer.

Frame with Accesories.....$2553.25

Turn Key Twin: Fuel and Go Package

Includes v-twin engine ($2000.00 value), 4 speed transmission: spool and MWSC shifter (page).

Turn Key Twin.....**$8,687.96**

1 - *Aluminum Hood*

For Super Cub 101 and most other narrow frame Cub Cadets. Works with grille and tower. Weighs 3 lbs.

Hood.....**$147.81**

Reinforced Compressed Fiberglass Composite Hood

Fits Cub Cadet narrow frame grilles:100 - 126. Hood works best if you use Dzsus fasteners to secure the hood to the grille and steering tower. Can also be mounted to grille using the conventional method.

LWHood.....**$173.40**

2 - *Aluminum Grille*

For Super Cub 101 and most other narrow frame Cub Cadets. Weighs 4 lbs.

Grille.....**$142.70**

Narrow Frame Grille

For narrow frame Cub 102-122 will also work for 70, 104, 124, 86, 106, 126, and more. Weighs 10 lbs.

**It is recommended that this grille be used with an aluminum hood to avoid premature cracking.*

PGrille (Plastic grille - image above).....**$135.00**

FGrille (Fiberglass grille).....**$215.00**

3 - *Aluminum Tower Assembly*

Includes battery tray for Super Cub 101 and narrow frame tractors.

TowerAssembly.....**$162.25**

4 - *Aluminum Tunnel Cover*

For Super Cub 101, also fits Cub Cadet narrow frames. Clearanced for 2 speed, hand brake, and MWSC shifter.

Tunnel Cover-52 (52 in. wheel base).....**$30.53**

Tunnel Cover-56 (56 in. wheel base).....**$32.38**

Tunnel Cover-Stock (Stock narrow frame).....**$29.44**

5 - *Aluminum Fenders*

This fender design resembles a 1066 IH tractor. For Super Cub 101 and standard Cub Cadets.

Fenders.....**$133.00**

Aluminum Rolled Fenders

8" wide x 36". Weighs 12 lbs. Sold in pairs.

Rolled-Fenders.....**$111.69**

6 - *Single Cylinder Engine Mounts*

For single cylinder motor for Super Cub 101.

Engine Mount S.....**$70.55**

7 - *V-Twin Engine Mount Plate*

Engine Mount-T.....**$104.76**

8 - *Bottom Flywheel Shield*

Mounts to frame.

Bottom Shield-1 (Single cylinder).....**$24.60**

Bottom Shield-T (V-twin).....**$17.17**

9 - *Clutch Pivot*

For Super Cub 101. Also fits narrow frame Cub Cadets.

Clutch Pivot.....**$68.82**

10 - Clutch Arm Assembly

Includes arm, shaft collars, and pivot with holes for both clutch and brake linkage.

Clutch Arm Assembly.....**$104.03**

11 - *Aluminum Seat Box*

For Super Cub 101. Also fits other narrow frame Cub Cadets.

Seat Box.....**$95.00**

12 - *V-Twin Starter Cut Out Plate*

Made to fit around starter for v-twin.

V-Twin Starter Cutout.....**$32.79**

13 - *101 Frame Rails*

For single cylinder or v-twin Kohler command engines.

Bare Frame.....$229.83

14 - *Steel Front Axle*

For Super Cub 101. Also fits narrow frame Cub Cadets.
Spindle length: 3" (same as stock Cub spindles).

Front Axle.....$154.02

Steel Front Axle for Cub Cadet 582

Includes: sperical ball tie rod ends and bronze bushed king pins. 26" wide, 1" x 2" tube axle. 34" length.

Front Axle-582.....$166.26

15 - *Front Axle Spacer*

Drops front axle 1.5". Allows for less aggressive rake.

Front Axle Spacer.....$34.19

16 - *Crossmember*

Ready to mount stock steering gear.

Crossmember.....$71.05

17 - *Steps*

Exclusively made for Super Cub 101. Can be modified to work of stock frames. 4 pieces included.

Steps.....$84.72

18 - *Front Weight Bar Assembly*

Holds 12 MWSC weights. Tube is capable of extending up to 8' from rear axle. No brackets.

FWB Assembly.....$167.48

19 - *Front Weight Bar Mounts*

For Super Cub 101. Also available for narrow frame Cub Cadets (uses a different rear mount design).

FWB Mount 101 (For Super Cub 101).....**$73.89**
FWB Mount (For stock narrow frame Cubs).....**$83.13**

20 - *Mid-Weight Bar*

Bolts directly to stock narrow or Super Cub 101 frames. Holds 20 MWSC weights.

MWB Assembly.....$73.94

Wheelie Bar Kits

Kit includes: wheelie bar, bumper bars, crossbrace, wheelie wheels, and attaching hardware.

WB Kit-IH-Plain
WB Kit-IH-Spoked (pictured)
WB Kit-Lightining Bolt-Plain
WB Kit-Lightining Bolt-Plain.....$232.56
WB Kit-Plain-Plain
WB Kit-Plain-Spoked.....$209.96

21 - *Aluminum Wheelie Bars*

Weighs 5 lbs. Made of 1/4" T65-6061 aluminum. **Customer must install side bracing between the two pieces to make them solid.*

WB-Plain (Plain design).....**$57.63**
WB-1 (Lightining bolt pattern).....**$66.30**
WB-IH (IH logo design).....**$70.38**

22 - *Wheelie Bar Cross Brace*

For MWSC wheelie bars. Bolts in at rear. **Customer must install additional bolt to keep brace rigid.*

WCB (For stock Cub Cadets).....**$31.50**

23 - *Bumper Bars*

For MWSC wheelie bars. Includes two pieces. Bolts in at rear. Bumper bars are good protection from the sled climbing on the rear of the tractor (required in some clubs).**Customer must install an additional bolt to keep bar rigid.*

WBB (Plain design).....**$34.48**
WBB-IH (IH logo design).....**$39.30**

24 - *Wheelie Bar Wheels*

WBW3 (Spoked wheels)
WBW1 (Plain - Pictured).....**$90.78**

25 - *Hand Brake*

Attaches directly to brake lever with 1 bolt. Includes aluminum handle.

Hand Brake.....$38.63

Billet Aluminum Hitch

Includes steel hitch plate. Adjustable design.

Hitch.....$150.00

NQS Pulling Suitcase Weights

Made of cast iron. #10 weights are 1" thick, 7" across top, 3/4" height, 5/8" slot, and 4 3/4" across the bottom.#5 weight is 1/2" thick .

WTS (10 lbs).....$22.75

WTS5 (5 lbs).....$20.25

Fake Suitcase Weights

Same dimensions as #10 weight.
Aluminum weight weighs 3 lbs. Plastic weight weighs 1 lb.

WTA (Aluminum).....$19.20

WTP (Plastic).....$18.00

Kill Switch

Grounding kill switch. Includes: wiring diagram with directions on how to shut off fuel pump.

KS.....$18.80

High Velocity Cooling Fan

Draws just 2.6 amps -145 CFM. Measures a 3" circumference and 5" length. Bolts on behind engine or grille.

CF.....$32.23

Spring Loaded Pin

You can easily and quickly slide your front weight boom in and out with this spring loaded 3/8" pin. Easily installed; weld bung on front with bracket.

SLP.....$17.99

Gas Pedal

Designed with bronze bushing and machined slot for smooth operation. Includes 48" cable.

GP.....$42.64

Replacement Gas Pedal Cable

Cable (48").....$19.91

C-60 (60").....$29.05

C-96 (96").....$40.37

Trunion.....$3.40

FAQ's

What makes the Midwest Super Cub gas pedal different?

The Midwest Super Cub brand gas pedal (above) features a machined slot with bronze bushing allowing the pedal to move smoothly.

MWSC gas pedal does not have a sticky spot when depressing the pedal.

How does the rear wheel fit over the hub on John Deere and Wheel Horse tractors?

The hub can be turned down or the 1/4" or 5/16" wheel spacers (page 8) may be used to space the wheel beyond the hub.

Can my Cub Cadet have 1" spindles?

Yes, some of the Cub Cadet Originals had 7/8" spindles. Some of the 1000 series Cub Cadet and some John Deere tractors have 1" spindles. 3/4" spindle is the most common size.

FREE SHIPPING FOR ONLINE ORDERS OVER $75.00!

WWW.MIDWESTSUPERCUB.NET

Polished Front Wheels

6 x 3.25" wheels with
3 bolt pattern.
6" wheels with billet
alluminum hub,
3/4" bearings and chrome cap.

6325 (Wheels ONLY).....**Call for Pricing**
6325A (Description above).....**$148.41**
6325AP (6325A + tri-rib tires).....**$190.75**

Douglas Wheels

These wheels have 5 bolt
pattern on 4.5" cirlce with
a 2-3/4" center hole. Priced
per pair. Includes rear center caps.

1210P (4x6 offset for 23" x 10.5" x 12" tires)
1266P (6x6 offset for 26" x 12" x 12" tires)
1248P (4 x 8" offset).....**$298.86**

8" x 3.250" Wheel

8" wheel with hub, 3/4"
bearings & chrome cap.
3 bolt pattern.
1" bushings also available.

8325 (Rim ONLY).....**Call for Pricing**
8325A (Description above).....**$160.14**
8325AP (8325A + tri-rib tires).....**$211.14**

2" x 10" Solid or Spoked Front Wheel

Available with tire, tube, and chrome
cap. Height of 15-3/4". 2-3/8"
from bearing to bearing.
Priced per pair.

210 (Solid Wheels).....**$278.46**
210X (Spoked Wheels).....**$309.06**
C210 (Caps ONLY - pair).....**$27.38**

Wheel Spacers

Fits Cub Cadet, John Deere, and
Wheel Horse tractors. Sold in pairs.
WS4 (1/4" thick)
WS5 (5/16" thick).....$17.99

Tri-Rib Tires

4-ply tubeless
design. 6" tires.
Made by GBC.
Priced per pair.

835TRI (3.5" x 8", 14.5" tall).....**$59.16**
635TRI (3.5" x 6", 12.5" tall).....**$54.83**

LawnTec Tires

LawnTec Yard & Turf,
26" x 12" x 12". These
NQS Championship
winning tires feature a
2-ply sidewall for flexibility with 4-ply tread face to maintain tread form, they have 27 lugs with 1/2" height for fuller bite.3.14" (PI) between each lug. Priced per pair.
Mounted tires are NOT returnable.

L1226 (Tires ONLY).....**$440.00**
L1226A (BOLT ON AND GO SPECIAL).....**$730.00**

Chrome Bullet Caps

For 6" x 8" Douglas front
wheels. **Priced per pair.**

CCD.....**$12.15**

Polished Aluminum Rear Center Caps

For Douglas rear wheels.
Priced per pair.

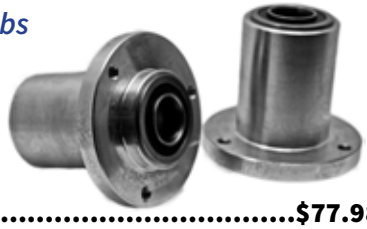
RCC.....**$28.64**

Chrome Valve Stems

Works with all rims except
210 and 210x. Priced per pair.

Chrome.....**$8.00**

Billet Aluminum Front Hubs



For 6" x 8" Douglas Wheels.
3/4" bearings or 1"
bushings available.
3" length. Priced per pair.

BH12.....**$77.98**

Tire Grinding Discs & Cups

3" cups (various grits) used to straighten up the front lug of tire. Used for Carlise Firestone tires. Sold individually.

GC 36
GC 46
GC 60

4" discs (various grits) for cutting the lugs. Used for top of lug.

GD 24
GD 36
GD 46
GD 60.....$42.50

Angled cup for Chevron lug. Used to restore the lug face to original 90 degree to carcus.

AC36
AC60.....$65.95

FAQ's

Which tire cutting cup or disk should be used when cutting the lug back on the lug type tires?
The disk is used for cutting the lug back. After the tire is pulled, the front of the lug tends to curl forward and the cup (above; top) is recommended to use to straighten up the front of the lug of a tire.
The angled cup (above; bottom) is to undercut the lug like the angles of the Cepek and LawnTec tires.

What offset rims should I run on a 582?
A 4 x 8 offset.

Which size rims should I use with a 23" x 10.5" x 12" Tire?
A 12" x 10" rim.

Which rim should I use with a 26" x12" x 12" Tire?
A 12" x 12" rim

How tall does the 6" wheel and tire stand?
6x325 rim with a 6.350 Tri Rib stands 12.5". This lowers the front end creating a rake.

How tall is the 8" wheel & tire stand?
8 x 325" rim with the 8x 3.50 rim stands 14.5" tall. This is about the way a stock tractor sits. More level that the 6" front rim package.

How tall are the 210 or 210X wheels when mounted?
Mounted on the tires they stand 15.75" tall. The tire is a low profile, scooter tire.

Lawn Tec Tires have fewer lugs?
Yes, the Lawn Tec tires have 27 lugs, each approximately 1/2" high to get a fuller bite.

Do I need hubs for the 210 & 210X tires & wheels?
No, the hubs are built in to the wheel. We ship with 3/4" bearings, but we can change to a 1" bushing if that is what you need.

Misc. FAQ's

Can you use gas or alcohol in the plastic fuel tank?
Yes, either fuel will work.

The fuel pump you offer, is it for gas or alcohol?
The pump we sell is for both fuels.

What size pipe goes with the XF12(Exhaust Flange for a 12 HP)?
1 3/8 ID(inside diameter) pipe goes on the 12HP
Part# XP38 for Chrome, Pipe38 for plain

What size pipe goes on the XF16?
1 5/8 ID part# XP5/8 for chrome or pipe58 for plain.

What else do I need to make the Electronic Ignition (EI) work on my tractor?
You need a 3 ohm coil. We sell a Voodoo Coil, made in USA or you can use the Blue Bosch Coil.

How does setting my timing change the motor?
Set timing-1 cylinder change point gap, more gap more advance timing.

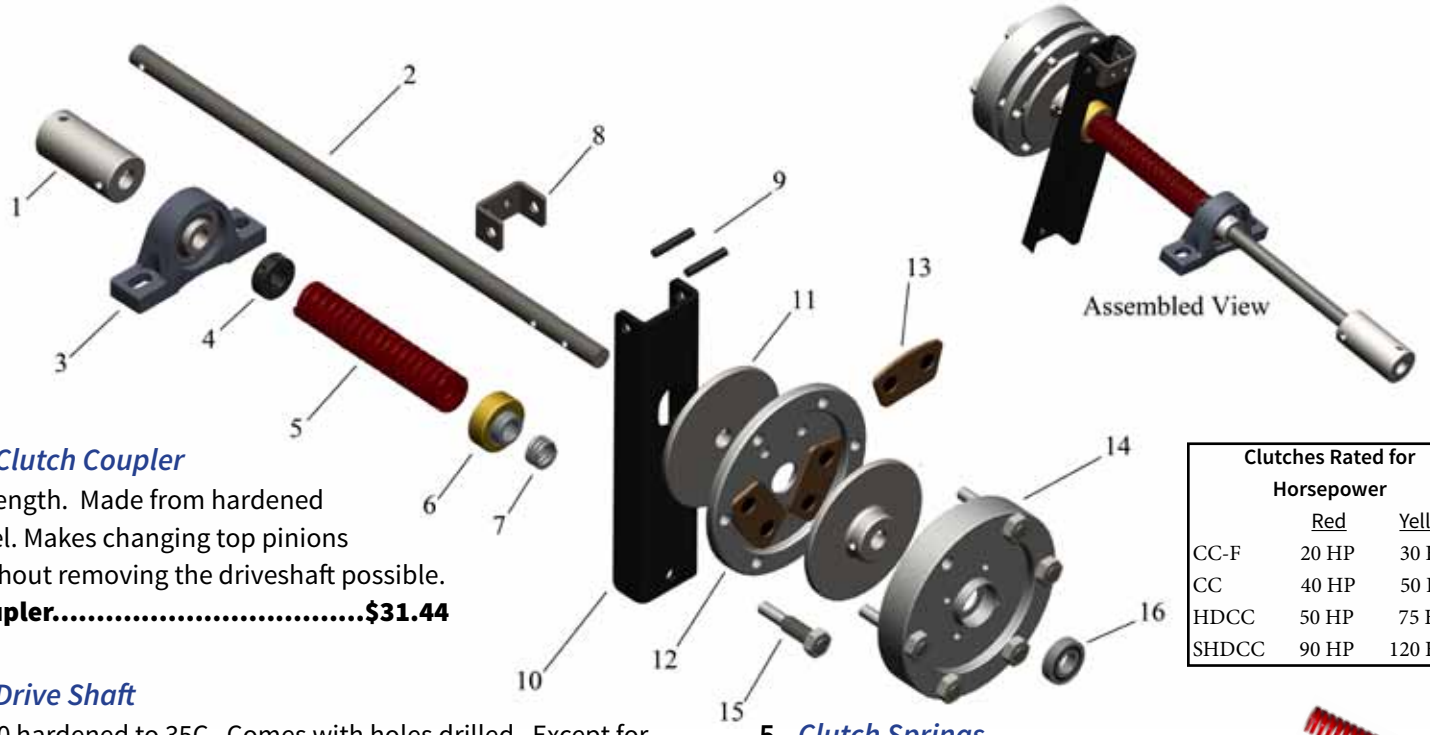
How big can you bore a stock block?
10-12 Block biggest you can bore is 50 over on old style which is 3.420. The newer style blocks can go 3.530 for 14HP Largest valve for 10HP Intake 1.850 Exhaust 1.50. Measure cylinder wall by using calipers between fins and inside diameter of cylinder.

16 HP stock can be bored 30 over 3.780 to 3.937. Head strap is needed!
18HP Blocks K361 can be bored to 3-15/16 must have head supports.

What size is the cooling fan?
About the same size as a soda can.

Where should the cooling fan be mounted?
It should be mounted on a solid surface. The pointed at the head and cylinder wall. Vibration will cause the fan to fail or fall apart.

Can we visit Midwest Super Cub?
You certainly can stop if you are in the Welton, IA area! Anytime between 9am and 5pm C.S.T. Monday through Friday. Julian and Cathy, the owners, are usually available during business hours. In the event that both of them are absent, the staff at Midwest Super Cub would be happy to give you a tour of the shop and sales facilities. You can also purchase parts from our friendly sales staff while visiting. There are a lot of great places to see in our area: American Pickers, John Deere headquarters and plants, the Field of Dreams, Wineries, Breweries, Distilleries, and the Mississippi River from the bluffs to the river roads are just some of the enjoyable things small towns in the area have to offer!



Clutches Rated for Horsepower		
	Red	Yellow
CC-F	20 HP	30 HP
CC	40 HP	50 HP
HDCC	50 HP	75 HP
SHDCC	90 HP	120 HP

1 - *Clutch Coupler*
3" length. Made from hardened steel. Makes changing top pinions without removing the driveshaft possible.
Coupler.....$31.44

2 - *Drive Shaft*
4140 hardened to 35C. Comes with holes drilled. Except for the hole behind the spring.
DSNF (Drive shaft for narrow frame fiber disc)
DSNFC (Drive shaft for narrow frame fiber disc with 3" coupler)
DSNM (Drive shaft for narrow frame metallic disc)
DSNMC (Drive shaft for narrow frame metallic disc used with 3" coupler)
DSWF (Drive shaft for wide frame fiber disc)
DSWFC (Drive shaft for wide frame fiber disc used with 3" coupler)
DSWM (Drive shaft for wide frame metallic disc)
DSWMC (Drive shaft for wide frame metallic disc used with 3" coupler).....**$31.82**
DSX (Extra long- 24" drive shaft)
DSX-KD (Drilled for Kevlar or stock disk - 24").....**$36.92**
Drive Shaft - Original Cub.....$93.02

3 - *Center Support Bearing*

High quality. Includes eccentric lock. A must for 4000 RPM and above motors.
CSB.....$39.30

4 - *Drive Shaft Split Collar*

For 5/8" drive shaft. Split collar locks to drive shaft to hold clutch spring firmly in place. Eliminates the need for a roll pin behind spring (the location where most drive shaft failures occur).
SC.....$7.10

5 - *Clutch Springs*

Heavy duty. The red spring is used for stock, stock altered, and 30 cubes. The yellow spring is used for pro and super stocks. Both are 6" in length and compress to 4.5".
HDR (Red spring 800#).....**$22.30**
HDY (Yellow spring 1150#).....**$24.33**

6 - *Throw Out Bearing*

For Cub Cadets.
TO1.....$57.83
TO1582.....$62.09

7 - *Teaser Spring*

For Cub Cadet.
Teaser.....$6.18

8 - *Narrow Frame Hanger Bracket*

Used with Cub Cadet release arm.
Bracket.....$12.66

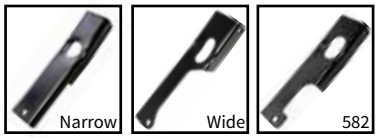
Teaser Spring Cup

For Cub Cadet 582.
T-Cup.....$16.21
T-Cup-582.....$14.00

9 - *Spiral Drive Shaft Pin*

1/4" x 1 1/2" length. Sold individually.
SPI.....$3.00

10 - *Heavy Duty Release Arm*



HDRA-N (Narrow frame)
HDRA-w (Wide frame)
HDRA-582 (For Cub Cadet 582).....**$60.18**

11 - *Pressure Plates*

One piece. Made from billet steel. Upgrade over stock plates (won't warp like stock). Sold in pairs.

PP (For 3 puck clutch - fiber or stock replacement)..**$62.39**
HDPP (For 4 puck clutch).....**$81.17**
SHDPP (For 5 puck clutch).....**$92.08**

12 - *Metallic Clutch Disk*

Made with three metallic pucks on each side mounted to a 1/8" aluminum disk. Thicker design and twice the holding power of stock disks.
**Requires new drive shaft.*

MD (Metallic disk - 3 puck - pictured).....**$98.63**
HDMD (Heavy duty - 4 puck).....**$114.24**
SHDMD (Super heavy duty - 5 puck).....**$120.05**

Kevlar/ Fiberglass Composite Clutch Disk

This clutch disk is a Kevlar/ fiberglass composite clutch disk. It has about 85% of the holding power of our metallic disks. Drop-in replacement for the stock fiber disk. Great for stock and stock altered engines.

KD (Kevlar disk works with stock driveshaft).....**$37.85**

13 - Metallic Clutch Pucks

Includes rivets. Sold individually. **MWSC will install the new pucks on your Midwest disk. Simply drill out rivets, remove puck, and mail it to us. We will replace with new pucks for no extra labor charge. Shipping not included.*

CP.....**$5.90**

14 - *Six Lug Aluminum Clutch Driver*

Clutch driver replaces stock driver. Can be used with stock, Kevlar, or metallic disks. Includes 6 drive pins. Use 3 or 6 drive pins, Loctite, and nut goes on flywheel side of drive. Bolt nuts on side where you can see bearings.

CD1.....**$97.82**

15 - *Drive Pin and Nut*

DP.....**$4.35**

16 - *Clutch Driver Bearing*

For MWSC driver.

H20566.....**$8.70**

Clutch Hub & Dowel Pin

For K-Series. Made from billet aluminum (replaces cast aluminum hub). With 4 bolts on 3" center to center flywheels. Use dowel pin or bolts, not both.

Clutch Hub (With dowel pin).....**$59.63**
Bolts.....**$5.20**

Adapter Step Washer

Used to mount billet aluminum clutch hub onto Magnum Kohler crank end. To be used with MWSC clutch hub.

SW.....**$12.15**

Complete Clutch

Includes: #2, 4, 5, 6, 7, 9, 10, 11, 12, and 13. Also available with MWSC Kevlar disk.

CC.....**$300.65**
CC-F (Fiber disk).....**$264.69**

Complete Clutch with Driver

Inludes: #2, 4, 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, and 16. Also available with MWSC Kevlar disc.

CC1.....**$394.23**
CC1-F (Fiber disk).....**$353.94**

4 Puck Heavy Duty Clutch Kit

Includes: larger driver, larger pressure plates, and 4 puck clutch disc.

HDC (Heavy duty clutch kit - descr. above).....**$294.78**
HDMD (4 puck metallic disk only).....**$114.24**
HDCD1 (Heavy duty driver).....**$111.18**
HDPP (Heavy duty pressure plates).....**$81.17**
HDCC1 (Heavy duty complete clutch with driver)...**$444.72**
HDCC (Heavy duty complete clutch).....**$344.57**

Super Heavy Duty Clutch Kit

Includes: driver, 5 puck clutch disk, pressure plates, and driver pins. This clutch was developed for our v-twin engines for maximum slip engagement for high wheel speed launches.

SHDC (Super heavy duty clutch kit - descr. above)..**$327.93**
SHDCD1 (Super heavy duty driver).....**$125.46**
SHDMD (Super heavy duty metallic disk).....**$120.05**
SHDPP (Super heavy duty pressure plates).....**$92.08**
SHDCC1 (Super heavy duty complete clutch).....**$492.66**

FAQs

New to pulling and I need to update my clutch, what should I know?

In a stock class the participant may only need a new disk for their existing clutch. Midwest Super Cub's kevlar disk (page 11) and possibly a heavier spring. The stock spring is a 300# spring and the heavier disk is a red spring, an 800# spring (both on page 10).

Why should I replace the stock pressure plates?

The stock pressure plates might not need to be replaced. Stock pressure plates are made with a thinner design and when used for pulling may result in warping. Check the stock plates to ensure that they are completely flat. If they are not completely flat, they can be trued or replaced with MWSC pressure plates (page 11) which are made from billet metal making them less likely to warp.

Which clutch should be used for a pro stock tractor?

You will need the metallic disk with three or four pucks on each side (page 11). This will require replacing the stock drive shaft. Along with the metallic disk you will need the 1100# spring which is a yellow spring (page 10).

Which driveshaft works with a 582?

The 582 is a wide frame, but because these were made with a rubber boot coupler the length of the drive shafts all vary. MWSC makes a driveshaft 24" long (page 10). The rear hole must be drilled after determining the correct length. If you have a MWSC 3" coupler (page 10), it may be used a drill guide. Coolant must be used when drilling the holes. The front two holes in the MWSC shaft come already drilled. The disk being used must be specified when placing an order for a MWSC driveshaft: metallic or kevlar (page 11). Standard length for a narrow frame tractor is 18 1/4" and the wide frame is 19 1/4". These are completely pre-drilled with all the holes except for one behind the spring, because each hole is a weak spot in the driveshaft. The spring is held in place by a split collar (page 10). One split collar is used behind a red spring and two behind a yellow.

How far does the spring need to be compressed?

MWSC red and yellow springs are 6" long and need to be compressed to 4 1/2".

Why is the heavy duty release arm necessary?

When using the heavier spring, it will be easier to press down the clutch pedal. The heavier release arm (page 11) is longer and stronger than the stock ones. There are 3 styles available: narrow, wide, and 582.

Is it necessary to use the teaser spring?

MWSC installs one in every clutch we assemble. The teaser spring (page 10) allows you to feel when the clutch is engaging. It also allows for a smoother engagement.

Why use a center support bearing?

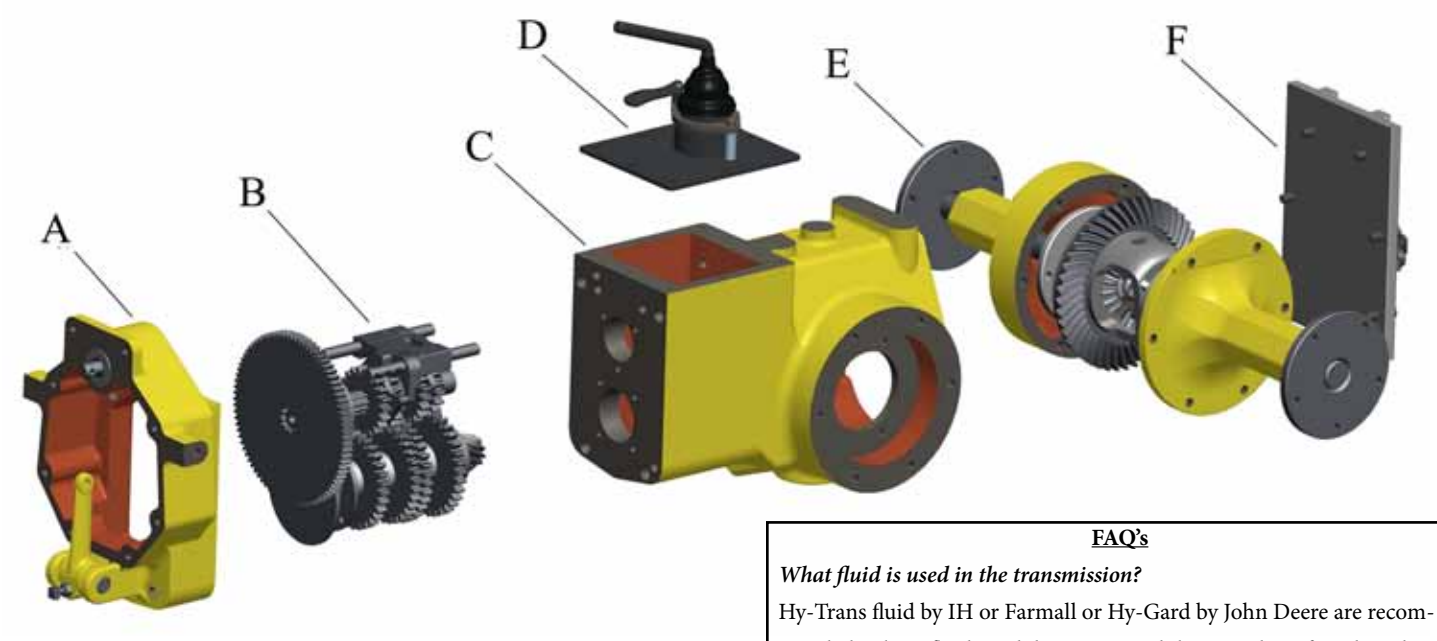
A center support bearing (page 10) or pillow block bearing are necessary in tractors running at 4000 RPM or above. When the clutch turns at a higher RPM the driveshaft is also moving in a small circular motion. The center support bearing helps eliminate some of this circular motion. It also helps with some misalignment issues.

How can I check if my clutch is running true?

When the clutch is installed and the engine is turned off, measure the distance between the disk and the 3 or 6 lug driver in 5 or 6 spots. The measurements should be the same. If they are not all the same, shims will be needed on one side of the motor, until the measurements are equal.

What are the differences between the regular metallic disk, the heavy duty metallic disk, and the super heavy duty metallic disk?

The metallic disk has 3 pucks on each side and it measures the same as the stock pieces. The heavy duty metallic disk has 4 pucks on each side and measures 6.5". The pressure plates and 6 finger driver all have a larger diameter. The super heavy duty metallic disk has 5 pucks on each side and measures 7.0". The pressure plates and 6 finger driver are also larger. In the transmission section there is a chart for HP and disk size (page 11).



A - *Aluminum Reduction Assembly*
See page 14.

B - *Internal Gear Assembly*
See page 15 for details.

C - *Aluminum Transaxle Case*
Lightweight cast aluminum transaxle case. Made of T-6 heat treated aluminum. Weighs 1/3 of the cast iron case.
ATC.....$918.51

Aluminum Reduction Housing & Transaxle Case
ARH.....$1,083.24

D - *Shifter*
Made with billet hardened steel. Features an integrated shifter lock. Heavy duty construction.
Shifter.....$208.08

E - *Internal Differential Assembly*
See page 17.

F - *Billet Aluminum Hitch*
Includes steel hitch plate. Adjustable design.
Hitch.....$150.00

FAQ's

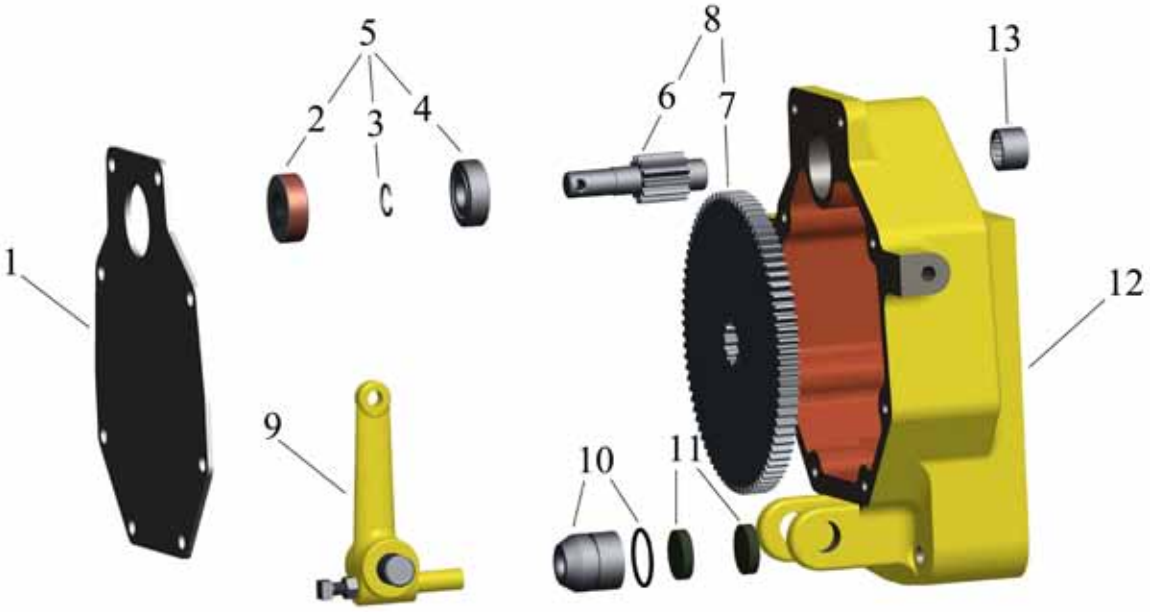
What fluid is used in the transmission?
Hy-Trans fluid by IH or Farmall or Hy-Gard by John Deere are recommended. These fluids each have a rust inhibitor in them for when the tractor is stored in an unheated garage or trailer where the variation of temperature creates condensation. For a pulling tractor use only 2 quarts.

Is locking the shifter in with a rigid lock necessary?
Yes. A solid lock is necessary. Tarp straps and hands are just not strong enough.

Is the Midwest Super Cub shifter a direct replacement for a stock shifter?
Yes. MWSC shifters (left) have a built-in shifter lock. Put the tractor in gear and lock the lock (flip of a lever) and go. The MWSC shifter prevents jumping out of gear. Short and long handled shifters availalbe. Long handled shifters are generally used for wide frame tracors and short handles for narrow frame tractors.

Does the MWSC hitch bolt on in place of the back cover of the transmission?
Yes. The transmission gasket is recommended to be used with the new hitch (left). Transmission fluid may be filled through the shifter cover.

What is the benefit in using the over or underdrive gears?
This is done by replacing the big gear and pinion in the reduction housing. The underdrive gear sets (page 14) slow down the entire transmission. Available in 10 & 20% underdrive. The overdrive gear sets (14) accelerates the speed of the transmission by 10, 16, or 23% with the replacement of the bowl gear and pinion. The 26, 33, 38, 43, and 47% are three pieces. A two piece pinion and bowl gear. This does not allow the puller to have additional gears; it provides a different gear ratio. There will still be one basic pulling gear. Additional gears can be achieved by doing a 2 -3 swap.



9 - *Brake Lever & Adjuster*
**Not availalbe for purchase.*

1 - *Aluminum Transmission Cover*
Front cover. Includes gasket.
ALFC.....$34.68

2 - *Front Pinion Seal*
Seal.....$19.51

3 - *Front Pinion Snap Ring*
Snap Ring.....$7.00

4 - *Front Pinion Bearing*
Bearing.....$20.73

5 - *Front Pinion Kit*
Includes: seal, snap ring, and bearing.
TRG-A.....$40.57

6 - *12 Tooth Pinion*
Replaces stock pinion.
TRG-12.....$72.04

13 Tooth One Over Pinion
TRG-7.....$72.04
TRG7A (Includes #5 & pinion).....**$103.50**

7 - *Overdrive Gear*
Bowl gear for overdrive/ underdrive.
Bowl Gear (gear only).....**$98.94**

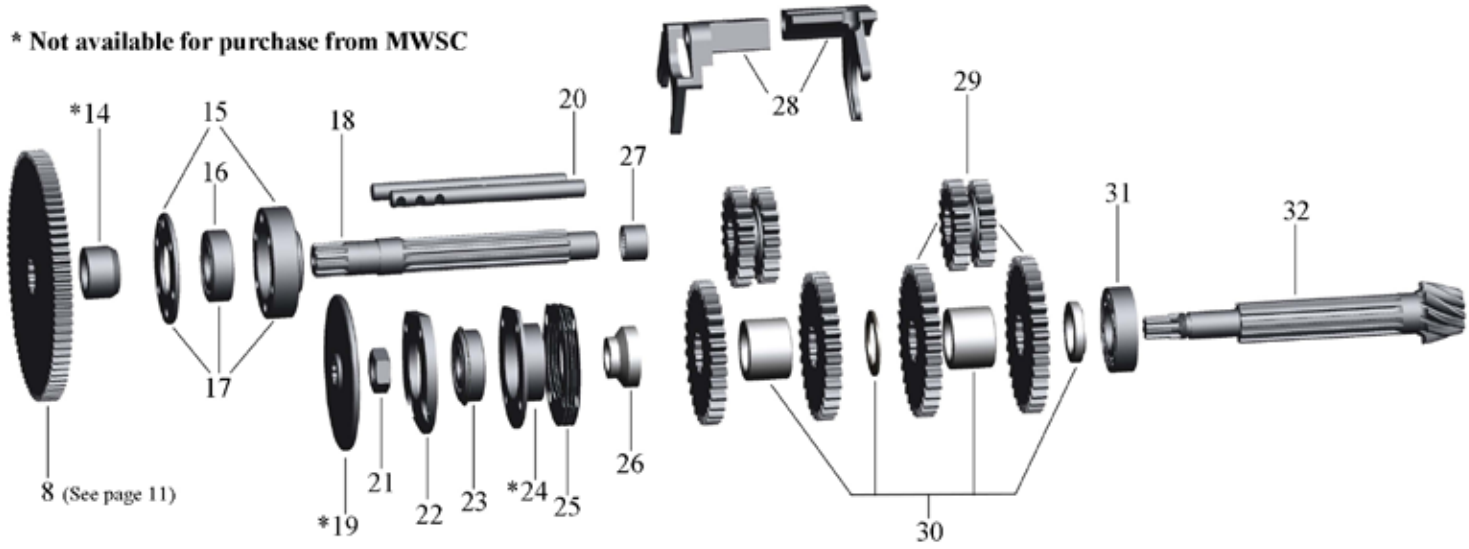
8 - *Overdrive & Underdrive Gear Kits*
20% underdrive slows transmission by 2 gears. **TRG08**
10% underdrive slows by 1 1/4 gears. **TRG09**
10% overdrive speeds up by 1 1/4 gears. **TRG10**
16% overdrive speeds up by 2 1/2 gears. **TRG16**
23% overdrive speeds up by 3 1/2 gears.
TRG23.....$140.76
26% overdrive speeds up by 4 gears. **TRG26**
33% overdrive speeds up by 5 gears. **TRG33**
38% overdrive speeds up by 6 1/2 gears. **TRG38**
43% overdrive speeds up by 7 gears. **TRG43**
47% overdrive speeds up by 8 gears. **TRG47.....$207.06**

10 - Brake Plunger & O-Ring
Brake Plunger.....$17.99

11 - *Brake Pucks*
Brake Puck (2 pucks, 1 rubber o-ring).....**$12.66**

12 - *Aluminum Front Reduction Housing*
Lightweight cast aluminum front gear reduction housing. Made of T-6 heat treated aluminum. Weighs 1/3 of the cast iron housing. Stengthen in the frame mounting area. Weighs 6.5 lbs.
ARH.....$320.03

13 - *Rear Cup Bearing*
For top pinion.
M12121.....$31.08



15 - *Top Shaft Bearing Holder*
Made with billet steel.
TSBH.....$42.60

16 - *Top Shaft Bearing*
TS Bearing.....$21.13

17 - *Top Shaft Bearing Kit*
Includes top shaft bearing holder and bearing.
TSBH-P.....$57.83

18 - *Super Tough Top Shaft*
STT1.....$79.56

20 - *Shift Rails*
Left and right rails. Drilled for MWSC's latest shift forks.
Shift Rails.....$25.75

21 - *Pinion Nut*
Nut for pinion of ring and pinion.
Pinion Nut.....$4.75

22 - *Pinion Holder*
Made with billet steel.
PH.....$37.53

23 - *Stock Front Pinion Bearing*
For bottom shaft.
ST668 (Stock replacement).....$53.21

Aftermarket Front Pinion Bearing
Customers must machine the backside of the retainer to allow for the bearing to pass through. .300" needs to be reduced from the stock front spacer.
5304NRK.....$104.87

25 - *Pinion Holder Shims*
Sold as a set of 3:
.010", .020", and .030".
PH-Shim.....$12.66

26 - *Stock Front Spacer*
For stock and 3 - 4 speed aftermarket transmissions. .85" thickness.
FSS.....$12.66

Front Spacer
Used for 2nd and 3rd gear swaps.
FS.....$12.66

27 - *Top Shaft Rear Needle Bearing*
TSB87728968.....$27.77

28 - *Custom Shift Forks*
Customers with True Gears will need to grind the forks to fit. USA gears require no radiusing. 4 lbs.
SF 4.....$141.78

29 - *Transmission Gear Sets*

For Cub Cadet transaxles. Super micro finish for less drag. Three gears in a set. Cluster slider and two bottom gears. Tooth count on top cluster gear and corresponding bottom gears add up to 52. Over 400 gear sets in stock for immediate shipping. These gear sets work great with stock top shafts.

GS 13/14	**GS 18/19**	**GS 22/24**
GS 14/15	**GS 18/20**	**GS 23/24**
GS 14/16	**GS 19/20**	**GS 23/25**
GS 15/16	**GS 19/21**	**GS 24/25**
GS 15/17	**GS 20/21**	**GS 24/26**
GS 16/17	**GS 20/22**	**GS 25/26**
GS 16/18	**GS 21/22**	**GS 25/27**
GS 17/18	**GS 21/23**	**GS 26/27**
GS 17/19	**GS 22/23**	

.....$140.76

3 Speed Gears: Reverse & 1st Gear

GS 13/14	**GS 13/18**	**GS 13/22**
GS 13/15	**GS 13/19**	**GS 13/23**
GS 13/16	**GS 13/20**	**GS 13/24**
GS 13/17	**GS 13/21**	

.....$126.23

Idler Gear

Pre-machined for 3 speed transmissions.

Idler Gear.....$44.63

30 - *Spacer Kit*

For aftermarket 3 and 4 speed transmissions.

SK3 (3 speed)

SK4 (4 speed - image above)**.....$24.33**

31 - *Stock Rear Bearing*

For ring and pinion.

350857R91 (Stock replacement)**.....$96.31**

Heavy Duty Rear Pinion Bearing

Double row ball bearing for lower pinion or pinion and ring gear. ***When using a 3 or 4 speed transmission use the machinery bushing instead of a rear spacer.***

5206M (Made in USA)**.....$108.58**

5206C (Made in China)**.....$63.31**

4 Speed Package

Includes: two sets of USA gears, a pair of shift forks, spacer kit, and top shaft.

4SP (+ gear #'s).....$492.66

3 Speed Package

Includes: three pulling gear set up, a pair of shift forks, spacer kit, top shaft, and reverse idler gear (machined for less set up time).

3SP (+ gear #'s).....$489.60

2-3 Swap Package

Includes: left fork, left shift rail drilled for our fork, one gear set, and the front spacer for 2-3 swap.

23SP (+ gear #'s).....$245.00

Aluminum Drop Box

To build a tractor similar to the MWSC Half Pint with gear (38% OD). 55T big gear to use with 12 tooth stock pinion.

DBA-Single (Single cylinder)

DBA-Twim (V-twin)**.....$731.09**

Workbench Stand

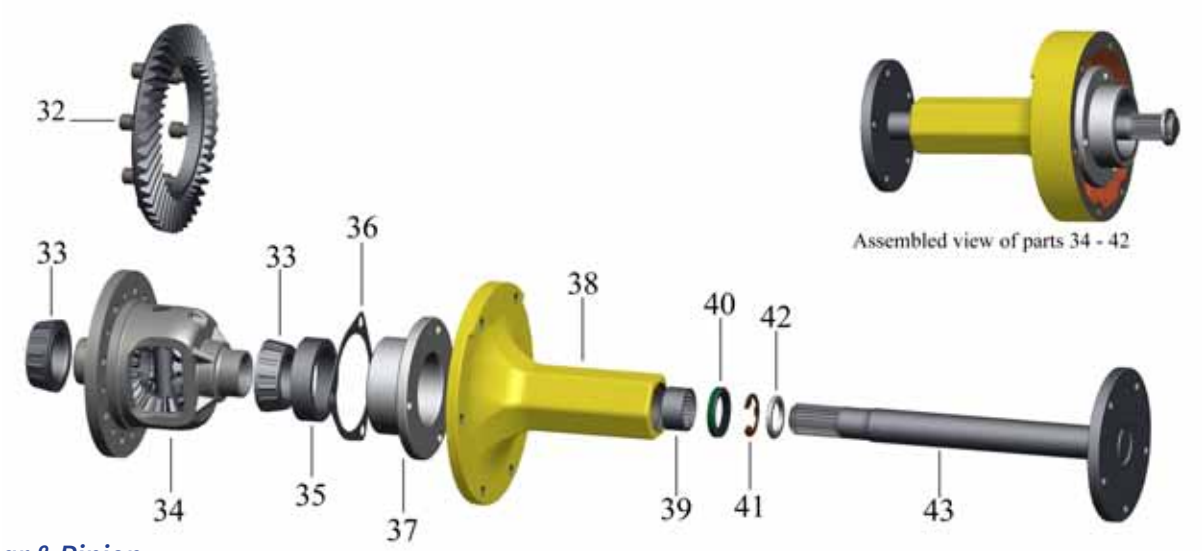
Great for motors and transmissions. Four posistion rotation. Fully adjustable arms. Includes fixture for single cylinder Kohler engines. Max load is 300 lbs.

Holder.....$137.96

Transmission Gasket Set

Includes: a rear plate, shifter, reduction housing, front cover, and 2 axle gaskets. 40% savings over Cub Cadet brand set.

TG.....$37.53



Assembled view of parts 34 - 42

32 - *Ring Gear & Pinion*
For Cub Cadet transmissions. Customer will need to torque bolts to 45 ft lbs. Bolts are 3/8-24 " x 5/8".
RP.....$505.31
Stock Used Ring & Pinion.....$90.78

Reverse Ring Gear & Pinion
For diesel power tractors. Has a left-handed nut on pinion.
RRP.....$628.47

33 - *Heavy Duty Carrier Bearing*

Timkin cone bearing. Works with machined bearing cups. Requires two bearings. Sold individually.
LM501349.....$24.43

34 - *Heavy Duty Carrier*

To be used with MWSC and Dart axles.
SDCarrier.....$315.18

Centering Ring

Used for centering the stock ring gear on a Dart carrier.
CR.....$29.91

35 - *Bearing Race*
To be used with heavy duty carrier bearing. Requires two. Sold individually.
LM501310.....$13.08

36 - *Shim Kit*

Includes four sizes: .003, .007, .014, and .028 thickness.
Shim-A.....$17.23

37 - *CNC Machined Bearing Cups*

For Dart and MWSC carriers. Sold in pairs.
BC 725.....$105.06
BC725P (With shims).....**$116.28**

38 - *Axle Tube Machining*
Machining of one pair of axle tubes. For heavy duty axle bearing. ***Customer must send MWSC a replacement pair.***
Axle Tube Machining.....$50.00

39 - *Heavy Duty Axle Bearing*
Requires two. Sold individually.
B1916.....$14.84

40 - *Large Axle Seal*
Requires two. Sold individually.
11734.....$13.67

Stock Axle Seal
For stock Cub Cadet or spool axles.
471224.....$9.58

Axle C-Clips

For heavy duty axles. Sold in pairs.
C-clips.....$3.50

42 - *Heavy Duty Carrier Spacer*
NOT availalbe for individual purchase.

43 - ***Heavy Duty Axle***

For billet steel carrier. Sold individually.

Axle.....$157.08

Heavy Duty Carrier Kits

Kits include: carrier, axles, hubs, and bearings. Customer must machine the axle housings. The washer goes between the side gear and snap ring. Customer needs to torque the bolts down for a stock ring gear to 35 ft lbs. The use of Locktite is recommended. MWSC ring gear needs to be torqued to 45 ft lbs. These axles are approximately 1" longer than stock.

Good core axle tubes required to receive $50 discount.

Includes: #33, 34, 35, 37, 39, 40, 41, 42, & 43.

SD725Y.....$584.09

Includes: #33, 34, 35, 37, 38, 39, 40, 41, 42, & 43.

SD725C (Includes $50 core charge).....$725.99

Complete Steel Spool and Axles

For Cub Cadets. No machining required. Includes all attaching hardware. Eliminates the need for welding stock Cub carrier together to make it into a locked rear -end and still have weaker Cub axles to contend with. Customer must torque ring gear bolts to 35 ft lbs. Use of Locktite is recommended.

Spool.....$372.20

Complete Steel Spool for Disc Brake

Customer will need to install calipers.

Spool-Disc.....$416.16

Stock Bearing Cup Reinforcement

Used to strengthen stock cast rear carrier bearing cups. Suggested for use with MWSC spools.

SBCR.....$32.45

Complete Cub Cadet Transaxles

**** Does NOT include shifter.***

TX2 (Two pulling gears).....$1,765.00

TX3 (Three pulling gears).....$1,940.00

TX4 (Four pulling gears).....$1,940.00

Good core required to receive $300 discount.

FAQ's

Why use the PH shims?

The shim set (page 15) allows the customer to adjust the depth of the pinion.

What is a Shim-A kit?

Shims are used to set the bearing pre-load and backlash. (Page 17).

What is the benefit of replacing the stock pinion holder?

The stock pinion holder is made of stamped steel and when the tires really bite, the stock pinion holder flexes and this causes the pinion depth to change resulting in ring and pinion failure.

What is the advantage to using a 13 tooth or one over pinion?

The stock pinion has 12 teeth. The 13 tooth pinion (page 14) is the only pinion that works with the stock bowl gear (84 tooth). The 13 tooth pinion will speed the gears by one gear. Example: if the gear you have is a 17 tooth gear, it will act as an 18 tooth gear.

Do ring and pinions have different tooth counts?

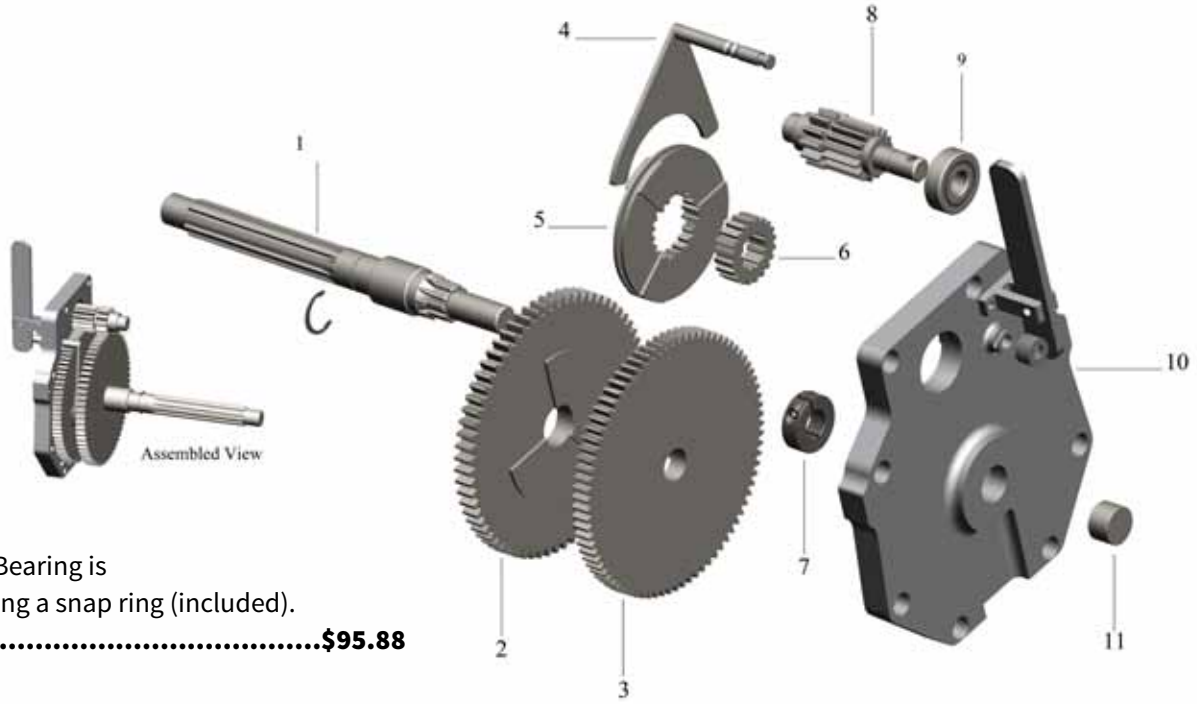
No. All of the ring and pinions (page 17) have the same tooth count (10 tooth pinion and 46 tooth ring gear).

Is the 2-3 swap, 3 speed, or 4 speed difficult to install?

The 2-3 swap (page 16) is not too difficult. The 3 speed is actually more of a challenge to install than the 4 speed (16). Watch the 'How To' video first to decide if this is a task you would feel comfortable taking on. If you would rather have Midwest Super Cub build one and ship it to you, that is an option.

When changing the 2nd and 3rd gears out is there anything else I will need?

When using aftermarket gears in the 2nd and 3rd posistion, you must measure the thickness of the original gears and the thickness of the aftermarket gears and either machine off the difference on the front spacer in the transmission or we have a new front spacer (page 15) that is pre-machined to the correct thickness.



1 - *Hardened Top Shaft*
Longer than stock shaft. Bearing is secured from the back using a snap ring (included).
Top Shaft.....$95.88

2 - *67T Gear*
For regular 2 speed transmissions.
REG 67T Gear.....$95.88

3 - *81T Gear*
For regular 2 speed transmissions.
REG 81T Gear.....$95.88

4 - *Shift Fork*
For 2 speed reducution housing.
REG Shift Fork.....$44.98

5 - *Outer Shifter Ring*
Works with a drop box and regular reduction houings.
Shifter Outer Ring.....$62.90

6 - *Inner Shifter Ring*
Works with a drop box and regular reduction houings.
Shifter Inner Ring.....$52.75

7 - *Split Collar*
2 Speed-SC.....$7.52

8 - *Front Pinion*
13/15 for regular transmissions.
REG Front Pinion.....$128.88

9 - *Front Pinion Bearing*
2SPFPB.....$23.32

10 - *Reduction Housing Cover*
REG Cover.....$172.38

11 - *Rear Cup Bearing*
For top pinion.
M12121.....$31.08

Complete 2 Speed Transmission
See page 17 for model.

Complete 2 speed box provides 1/2 gear changes. Easily shifted with lever. This set-up eliminates the need for a shifter lock while in gear. This package includes: front reduction housing (***exchange required***), brake lever (***exchange required),*** top shaft, 81 and 67 gears, inner and outter shift rings, 2 speed pinion, bearing, snap ring, front cover for front reduction housing, shift fork, shift lever, and attaching hardware.
Pro/ super gear box gears: 20 - 23 will get the customer: 23.3, 23.8, 24.3, 24.95, 25.3, 25.95, 26.3, 26.95.
Stock altered gear box gears: 17 - 20 will get the customer: 20.1, 20.7, 21.2, 21.75, 22.25, 22.8, 23.3, 23.875.
2 speed using MWSC drop box
2 speed.....$798.44

Kohler Command Billet Steel Crankshaft

Available in various strokes.
C23 (2.385”)
C25 (2.525”)
C26 (2.640”)
C28 (3”)
C3120 (3.120”)
C3220 (3.220”).....$707.88

Ductile Iron Stroker Crank

For stock and stock altered engines.

C30 (3”).....**$262.55**

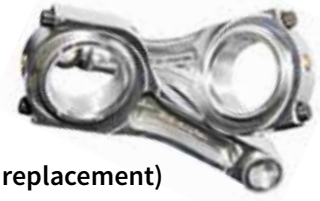
Ductile Iron Stroker Crank Package

Includes: stroker crankshaft, MWSC economy rods, and rod bearings. To be used with stock pistons.
C30P.....$441.40

Kohler Command Steel Crankshaft Gear

Designed for our steel crankshaft and stock crankshafts. No degree mark to be used with adjustable cam gear.
C-Crank Gear.....$55.29

Kohler Command Connecting Rods



These rods are machined for MWSC replacement rod bearings (Rod Brg C). Available in various lengths.
VRod4495 (4.495” stock length replacement)
VRod4545 (4.545” used with 3.120” stock crank w/ .750” PH piston)
VRod4605-Stroker (4.605” used with 3.000” stroke crank w/ .750” PH piston)
VRod4785-290 (4.785” + .290” to be used w/ .750” PH Piston)
VRod4843 (4.843” used with 2.525” stroke crank w/ .750” PH Piston).....**$239.70**

Lash Caps

Protects stem from wear of roller rocker. Sold as a set of four.
LC-7 (7 mm)
LC-516 (5/16”).....**$19.05**

Economy Rods

All economy rods have lighter weight design for motors with less than 8,500 RPM and come with standard socket head cap screws. Sold in pairs.
Economy V-Rod Stroker (Used with stroker crank)
Economy V-Rod 290 (290 length)
Economy V-Rod Stock (Stock length)
Economy V-Rod Stroker-S (3” stroke with stock pistons).....**$140.00**

Rod Bearing for MSC Command Rods

Only standard available. Sold in pairs.
Rod Brg-C.....$50.72

JE Pistons for Command Engines

Comes with piston, rings, wrist pins, and clips. Various sizes and two pin heights available. Each pair includes three rings. Sold in pairs.

Sizes - .750”	Pin Height
3.032”	3.327”
3.071”	3.385”
3.110”	3.425”
3.189”	3.445”
3.228”	3.583”
3.270”	3.622”

Sizes - 1.040” Pin Height
3.032”
3.051”
3.150”
3.270”
3.307”
3.385”
3.583”

(Size + pin height).....$303.92

.062” Command Copper Head Gaskets

These head gaskets are thicker which is useful for gaining more clearance for valve to piston clearance on bigger camshafts. Available in various sizes: 18-22hp, 25hp, and 3.375” bore. Sold in pairs.
HGC31 (.031” thick).....**$21.18**
HGC62 (.062” thick).....**$29.71**

Valve Covers

With o-ring and stainless steel bolts. Prevents leaks from valve cover spacers. Designed to clear most all roller rockers. Sold in pairs.
VC.....$82.00
24153 (pair of O-rings only).....**$12.50**

MSC Pro V-Twin Cast Cylinder Heads

Features include: raised port runner, set-up for small block Chevy studs, rockers, and springs. 5/16"stems with stock single cylinder Kohler valve length (4.720"). Uses stock valve cover. 356 T6 aluminum. Sold in pairs.

Head Pro V-Twin (Bare).....**$571.05**
Pro V-Twin Head (complete).....**$2240.00**

Kohler Command Engine Sleeves

For 3.270 bore (25 hp) and 3.307 bore. Use to sleeve your 18 to 22 hp engine to a larger bore size or to repair worn-out bore. Sold in pairs.

Sleeves.....**$63.00**
Sleeves - install (machine work service and installation including finishing bore and hone).....**$262.00**

Head and Front Locating Pins

Six needed. Sold as a set of 6.

1238003.....**$11.15**

Kohler Command Steel Camshaft Blank

CCB.....**$115.50**

Kohler Command Adjustable Steel Cam Gear

Make any cam adjustable. Fits MWSC steel cam blank, or you can machine your stock cam to fit.

CCG.....**$78.75**

Roller Lifter with Tie-Bar

Vertical tie bars require any machine work to install. Horizontal tie bars do **NOT** need machining to install. Sold as a set of 4.

RL-V (Vertical tie bar).....**$130.00**
RL-H (Horizontal tie bars).....**$141.60**
Hydraulic Racing Lifters (Set of 4).....**$42.00**
Solid Lifters (Oil hole in face - set of 4).....**$70.00**

Cam Kits

Aftermarket cast cams. 4000 and 4500 increase torque throughout entire band. Kit includes: cam shaft and lifters. May be ran with solid or hydraulic lifters. When using solid set lash to .010 intake, .012 exhaust use stock springs with either. 4500 can be upgraded to CVS spring kit.

Cam Kit 4000
Cam Kit 4500.....**$205.00**

Cam Kit 6000

Aftermarket cast cam ground for open RPM engines. Operates at up to 7000 RPM. Increased lift of .420" lift and increased duration of 250 degrees. Kit includes: camshaft, lifters, and springs. Can be used with solid or hydraulic lifters. ***If using solid set lash to .010" - .012".***

Cam Kit 6000.....**$250.00**

Cam Degree Tool

Used to easily degree camshaft and check end play of cam and crankshaft. Made from 1/2" high strength aluminum.

Degree Tool.....**$33.87**

Adjustable Rocker Stud Kit for Kohler Command V-Twin Engines

This kit eliminates the need for adjustable push rods. Uses a proven design used in V-8 racing engines, helps stabilize push rods and rockers by use of the push rod guide plate. No machining required. Drop in to fit. Perfect for stock and stock-altered v-twins. Made for use with stock length valves, works great with our heavier single springs (CVS). Kit includes: 4 rocker studs, 4 fulcrums, 4 poly nut adjustors, and 2 push rod guide plates.

RK4A.....**$62.99**
Guide Plates (Guide plates only - pair).....**$17.99**

Kohler Command Aluminum Roller Rocker Kit

Includes 4 - 1.6 ratio roller rockers, four screw in studs, four adjustors, two head inserts (securedby head bolts), and two longer head bolts. Requires some machining on head and use of 3.00" longer valves. Use with valve covers. Includes lash caps.

RR Economy Kit.....**$149.74**
RR Kit Upgrade (Compcam rockers & ARP studs)...**$265.30**

SS Valves for Command Stock

Stock length and .300" longer for our double spring kit. Sold in pairs.

CSSI (Intake - stock diameter & length)
CSSX (Exhaust - stock diameter & length)
CSS1-300 (Intake - .300" longer, stock diameter)
CSSX-300 (Exhaust - .300"longer, stock diameter)
CSS1-145 (Intake - .300" longer, 1.450" diameter)
CSSX-125 (Exhaust - .300" longer, 1.250" diameter).**$97.92**

Bronze Valve Guides

1/2" OD. 7mm ID. Sold as sets of 4.

VG.....**$32.86**

Kohler Command Valve Springs

These springs are stronger than stock springs. Sold in sets of 4.

CVS.....**$53.16**

Double Valve Springs

Sold in sets of 4. For .300" longer valves. Locators now included.

DVS.....**$70.21**

DVS Ti Retainer Upgrade.....**$36.60**

DVS Spring Upgrade.....**$195.21**

Voodoo Coil Pack and Pro Aluminum Bracket

Bracket bolts on in place of factory v-twin coils. Designed to work with 2 barrel or aftermarket intake manifold. Will NOT work with stock 18hp - 27hp intake manifold.

EI-VTwin Pro Coils.....**$218.28**

Voodoo Coil Pack and Stock Aluminum Bracket

Will work with stock 18hp - 27hp intake manifold.

EI-VTwin Coils Stock.....**$218.28**

Crank Trigger Ignition for Kohler Command V-Twin Engines

Kit includes: magnet ring, bracket and modules. Easy hook up. Buyer must specify the diameter of PTO end of crank at the block. MWSC steel cranks require a 1.5" magnet ring. This crank trigger should be used with 2 coils or the Dyna coil packs (recommended).

EI-VTwin.....**$175.44**

RC Kit

Steel roller cam (grind and blank), 4 lifters, adjustable steel cam gear. Standard and reverse grind. ***Installer will need to machine the block to clear the roller lifters.***

RC Kit-S (Standard)

RC Kit-R (Reverse grind).....**$523.75**

Autolite Spark Plug 4056

Stock altered spark plug, Sold individualy.

4056.....**$4.35**

Spark Plug Wire

18" 8 mm high temperature spark plug wire.

Plug Wire.....**$10.00**

Push Rods

Sold in a set of 4.

Available lengths: 6.050", 6.350", 6.400", 6.500", and 6.650".

Push Rods (+ length).....**$63.41**

Kohler Command V-Twin Non-Adjustable Steel Flywheel

To be used with our crank trigger ignition. Flywheel is degreed and includes a timing pointer which bolts onto the block where the stock coils were mounted.

FC32.....**$195.59**

FC32A (FC32 flywheel & EI-VTwin).....**$371.03**

FC32-Kit (Complete trigger setup kit: crank trigger kit, Dyna coil kit, and F32 flywheel).....**$589.31**

Offset Key

6 degree offset flywheel key for Kohler Command engines. Fits single cylinder, v-twin, and big block v-twin commands.

Offset Key.....**$11.75**

Kohler Command Steel Adjustable Flywheel

Easily adjust timing as desired. Uses stock magnet and ring gear from the original flywheel.

FC.....**$306.77**

Billet Aluminum Electronic Ignition Flywheel Assembly for V-Twin Kohler Command

Fits 18 - 30 hp Kohler command v-twin engines, both horizontal and vertical configurations. Weighs 3.5 lbs.

REF-C Complete Kit (Includes: flywheel, billet aluminum cooling fan, modules, and bracket).....**$537.54**

REF-DIY Do It Yourself Kit (Includes: flywheel, billet cooling fan, and modules).....**$333.54**

Kohler Command 24 mm 2-Barrel Carb and Manifold

For the CH series (horixontal crank).
This is a stock, factory part.
Meets OEM requirements.

Carb-2 PKG.....$472.26
Carb-2.....$339.86
Manifold-2.....$146.88

Air Cleaner Adaptor

For stock Kohler Command carburetors. More than 20% flow increase and increased horsepower. Works with K & N air filter.

V-Twin AC Adaptor.....$37.65

Plenum Adaptor

Adapter makes a 2 barrel manifold adapt to 1.2" single cylinder Kolher carb.

Plenum-1.....$97.92

Kohler Command Economy Exhaust Flange

Includes gaskets. Sold in pairs.

EFC.....$20.17

Cast Aluminum Intake for Stock Heads

Intake accepts 1.200" carb with no adaptors. Carb intake flange is tipped upward for clearance past clutch if installed traditionally and if the customer runs with the heads flipped around it will clear the front start pulley. Available in standard and ported.

The standard version has the inside of the tube finished as casted, which is the same size as the 2 barrel intake.

The ported version is fully ported to match the customer's ported cylinder heads. The 2 piece design allows the customer to finish the intake how they choose.

VT Intake s.....$223.38
VT Intake P.....$294.78

Dyno testing has proven these intakes are capable of providing gains of 10 - 15 hp over the 2 barrel intake with fully ported version and 10 - 15% for the standard version.

Command 2 into 1 Header Systems - Middle Exit

For Kohler command. Includes copper gaskets. Availalbe sizes: 1 1/8 and 1 1/4.

Manifold-MiddleX.....$105.62

Command 2 into 1 Header Systems - Side Exit

For Kohler command. Available sizes: 1 1/8 and 1 1/4.
Includes copper gaskets.

Manifold-SideX.....$175.44

Command Zoomie Header

Flanges are welded on pipes.
Available sizes: 1 1/8, 1 1/4, 1 3/8.
Includes copper gaskets. Sold in pairs.

Zoomies.....$58.70

Command Zoomie DIY Kit

Includes flanges and gaskets.
Available sizes: 1 1/8, 1 1/4, and 1 3/8.

ZoomieDIY.....$42.64
Zoomies Pipe (Pipes only).....**$25.50**

MVP Command Engine Packages

Includes: 18 to 25 hp, 1.2 carb gas or alky, balanced stock crank, billet rods, flat top pistons, roller cam, roller rockers, double springs, fully ported stock heads, steel adjustable flywheel, custom intake and header. Dyno-tuned. MWSC's most affordable price. Power ranges from 50 hp to 90 hp.
**GOOD CORE REQUIRED.*

MVP Command.....$5,200.00

Includes: 18 to 25 hp, same engine as above with the exception of pro v-twin heads, camshaft, and cubic inch size up to 56 cubic inches. **GOOD CORE REQUIRED.**

NQS Pro V-Twin.....$8,600.00

MVP Special - Kohler Command V-Twin

Billet rods, JE flat top pistons, reground camshaft, new lifters, professionally ported heads, heavy duty single valve springs, rework downdraft carb with an adjustable main jet, velocity stack, 2 into 1 header, adjustable steel flywheel and engine dyno service.

MVP Special.....$2,100.00

Kohler Command V-Twin Facts

The Command v-twin is an all metric engine, the only thing that is S.A.E. measurements are the valve lifters. The lifters are .842" in diameter, which is the same diameter as a small block Chevy (SBC), however, the lifter spacing is wider on the Command than the SBC.

All Commands have the same stroke which is 2.64" (67mm), except the 30 HP (CH750) which is 2.716" (69mm).

The 18-22 HP engines have a 77mm bore (3.032") and the 23 HP is 80mm (3.150"). The 25-30 HP has a 83mm bore (3.268"). Some of the older 25 HP (before 2002) were nikasil coated block and is hard to work with, these make good candidates to have bored out to the big bores and coated with NiCom. NiCom is the newer and improved version of nikasil. NiCom consists of Nickel and carbide. Most all NASCAR engines use this, as well as most outboards and snowmobiles.

The largest over bore you can go with the 18-22 HP engines is 3.110", 23 HP is 3.228" and the 25 to 30 HP is 3.327". You can bore out the existing sleeve in the small engine and re-sleeve it to the larger bore. If you want to go to a 3.385", 3.425", or 3.445" bore it is best to use an 18 HP or nikasil 25 HP engine and have it NiCom. If you go to the bigger bore you will need to stud the block.

Based upon our experience, on an engine making over 90 ft. lbs. of torque, you are running on borrowed time. Anything in the 90's will have a tendency to tear the block apart starting just below the oil filter mount across and through the rear main bearing area then up through the lifter boots.

The Command has a stock rod length of 4.495 you would use our JE piston with a 1.040" pin height. If you use the .750" pin height piston and a stock crank it would take the .290" longer rod (4.785"). If you run a stroker crank it will take .750" piston along with the corresponding rods (listed on page 20). If your using the 3.220" stroke crank you would use the .750" pin height piston along with a stock length rod (4.495").

We have an economical stroker crank set up which works very well for the mud boat, surface drive, pro drive boats and it also works well for stock goverened pulling engines. This kit includes: ductile iron 3" stroker crank, its corresponding rods for use with the stock pistons and rod bearing inserts for the rod. Our dyno test showed over a 20% increase in torque over a stock engine.

One caveat of running stroker cranks is with the connecting rod clearance past the cam lobes with larger lift cams. Typically it is necessary to run a smaller base cirlce cam for this, but stock cams will clear the rods in the 3" stroker engine. The easiest way around the clearance issue is to run a reverse ground cam shaft and flip the heads around on the engine to get the carb out in front.

The stock Command cylinder head is somewhat limited unless you break out the spool gun and weld up around the outside of the ports, but without welding on stock heads we build 100 HP v-twin all the time. One of the things with a stock valve and spring is that the installed height of the spring is rather short. You can't insert too big of a lift cam in without running into coil blind issues. We use our roller rocker kit along with the .300" valves and double valve springs to jump up the lift.

The stock valve train and using our single valve springs you can run a .275" lift cam which would produce a .412" lift at the valve (stock rocker ratio is 1.5:1). This set up is good to about 7500 RPM. Our $2,000.00 engine special with a 25 HP engine will bring the horsepower up to the 60 HP and torque rainge.

When choosing to upgrade to our roller cam, we would suggest using the upgraded PAC double valve springs (page 21), titanium retainers, and ARP studs. This set up will generate up to 10,000 RPM without valve float. Our regular roller rockers are limited to 350# of spring open pressure and the standard DVS will be good until around 8500 RPM.

Our roller cam kit (page) comes with your choice of vertical tie bar roller lifters or the horizontal tie bar lifters. There are advantages and disadvantages to these lifters. The horizontal tire bars don't require any machine work to the block, but the vertical tie bar lifters are stronger than the other ones.

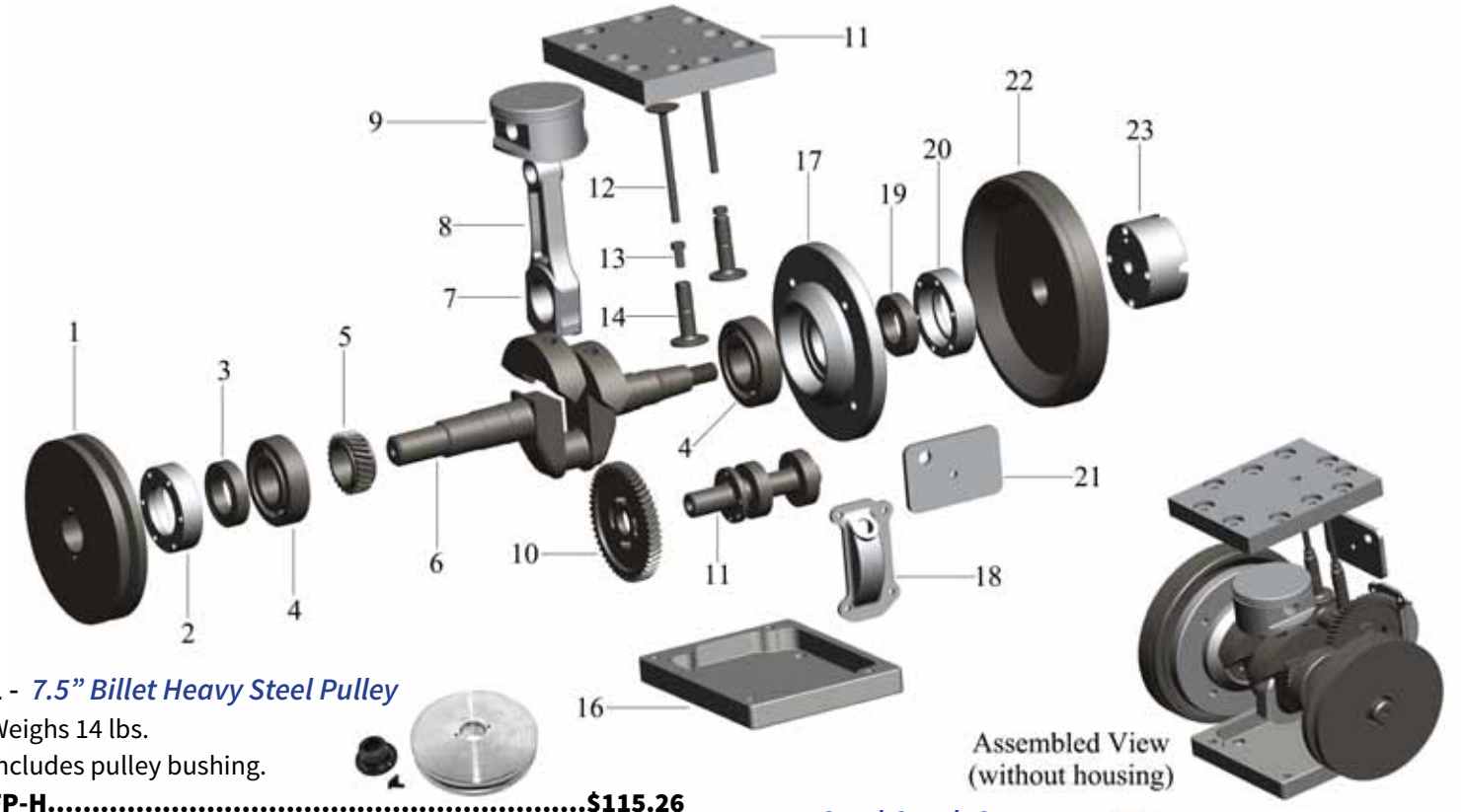
Stock carbs - it is best to use the carb with the accelerator pump in them. They came on the 25 and 27 HP engines. These have a larger butterfly and venturi versus the other style carbs on the 18 - 20 HP engines.

When using a stock downdraft carb, it is best to use the plastic intake. The vertical intake can be used with an adaptor and is a better choice if you port the inside of the manifold out. For most all goverernor engines use the plastic intake.

Adjustable steel flywheels weigh about 25 lbs. A stock engine is best to start with around 32 degrees timing. Stock coils are pretty weak spark and do not work well for high RPM applications and its best to use our EI set up with Vodoo Coils. Most of the newer stock coils have built in Rev limiters too.

The 2 barrel intake isn't very helpful with a stock egine, as a matter of dyno testing the downdraft with a plastic intake will out perform it. If you run an open RPM engine and use it with the 1.2 carb adapter and 1.2 carb, then you will see a performance gain, but our ported intake will out perform that 2 barrel intake by sometimes as much as 15 HP more.

On high RPM Commands, make sure you set the end play toward the upper end of the Kohler specificaton, otherwise it may stick a main bearing to the crank.



1 - ***7.5" Billet Heavy Steel Pulley***

Weighs 14 lbs.
Includes pulley bushing.

FP-H.....$115.26

7.5" Aluminum Plain Front Pulley

Includes pulley bushing. Weighs 2 lbs.

FPP1 (1").
FPP1125 (1.125") FPP1250 (1.250").....$84.41
Midwest Super Cub cranks take 1.250"

Pulley Bushing

PB.....$13.67

2 - ***Front Double Bearing Cups***

Front cup. This set up helps to support the crank.
DBC-F.....$52.39

3 - ***Bearing for Front Bearing Cups***

Front bearing designed to fit the front double bearing cup.
R24RS.....$17.99

4 - ***Main Ball Bearing***

Higher strength and less rolling resistance than stock.
Available in both 8 ball (import) and 12 ball (U.S.A)

MB8.....$18.24
MB12.....$77.72

5 - ***Steel Crank Gear***

Crank Gear.....$81.93

6 - ***Forged Steel Crankshafts***

.4340 forged steel crankshaft, large radius journals. Available sizes: 3.165" (stock), 3.250"(stock), and 3.375".
(C + Crank Size) C3165, C3250, C3375.....$313.14

Billet Super Duty Crankshafts

Includes 3 year Pro Rated warranty. Available sizes: 2.875", 3.000", 3.250", 3.500", 3.750", 3.875", 3.937" 4.000" and 4.090".
(B + Crank Size) B2875, B3000, B3250, B3500, B3625, B3680,B3750, B3875, B3937, B4000, B4090.....$543.66

Our cranks* DO NOT *have timing marks

7 - ***Rod Bearings for Rod***

Comes with bearing lock hole already drilled. Customer must radius edges.
RodBrg (Standard)
RodBrg10 (.010 under)
RodBrg20 (.020 under)
RodBrg30 (.030 under).....$19.05

8 - *Billet Aluminum Connecting Rods*

Midwest Super Cub brand. These connecting rods feature a bearing lock to prevent rod bearing movement. Rod includes dipper.

R5300, R5750, R5812, R5875, R5906, R5937, R5968, R6000, R6031, R6125, R6187, R6250, R6145.....$154.25

9 - *JE Pistons*

Size measured from wrist pin to top of pistion.

Bore Size	Pin Height	Rings
3.270”	1.040”	1.0-1.2-3mm
3.307”	1.040”	1.0-1.2-3mm
3.405”	1.125”	1.0-1.2-3mm
3.530”	1.125”	1.0-1.2-3mm
3.775”	1.125”	1.0-1.2-3mm
3.937”	0.875”	.043-.043-3mm
4.060”	0.875”	.043-1/16-3mm
4.125”	0.875”	.043-1/16-3mm

JE + (size) + (pin height).....$190.43
866-063-MW (JE spiral locks - pair).....**$5.50**
Wrist Pin.....$24.33
Oil Rail.....$14.71
Piston Rings.....$41.18

Diamond Pistons

Bore Size	Pin Height	Rings
3.405”	0.875”	1.0/1.2/2.8mm
3.775”	0.875”	1.0/1.2/2.8mm
3.810”	1.125”	1.5/1.5/3mm

D + (size) + (pin height).....$208.07

3.825”	0.875”	1.0/1.5/3mm

Ceramic coated top and molycoated skirts. Gas ported.
D38250875.....$237.56

COMBO DEALS

*****These combos are **NOT** balanced. Balancing available for $125+ heavy metal.*

Steel Crank, Rod, and Piston $542.64
Billet Crank, Rod, and Piston.....$761.94
Stock Altered Block & Crank.....$1185.00

*****Upgrade to a Billet Crank for an additional $150.00*

10 - *Steel Adjustable Cam Gear*

Fits: MSC, Lakota, Nichols, and Vogel steel camshafts.

CG.....$57.63

11 - *Billet Aluminum Head Blanks*

For 10, 12, 14, and 16 hp Kohler engines. These heads come with the head and bolt pattern drilled and counter bored.

HB10, HB12, HB14, HB16.....$54.72
CNC heads with stock size valves and 330 lift cam.
CNC10-12, CNC14, CNC16 (CNC 10-12 pictured).....**$85.00**

12 - *Manley Gen II Stainless Valves*

Fits Kohler single cylinder engines.

SS21 (Intake 2.035”)
SS1625 (Exhaust 1.625”)
SS1380 (Intake/ Exhaust 1.380”)
SS125X (Exhaust 1.125”).....**$49.96**

13 - *Large Headed Adjusters*

9/16” head diameter for offset valves. Larger than stock adjusters. A must have for many engines with relocated valve locations. Works just like a stock adjuster, no jamb nut required. Sold in pairs.

LHA.....$19.05

14 - *Large & Super Large Base Lifters*

For camshaft lifts under .575”. Fits single cylinder Kohler engines; 1.280” face diameter.

LBL (Large base lifter)
For camshafts over .570” lift. 1.500” or 1.75” diameter head. Super finished. ***Adjusters sold seperately.***
SLBL (Super large base lifter)
SLBL175 (Super large base lifter 1.75” diameter).....**$49.96**

15 - *Steel Cam Blank*

Fits MSC, Lakota, Nichols style cam pins.

Cam Blank
Cam Blank PT (Pin through style camshaft blank)...**$73.76**

Hardened Cam Pin
For pin through cams.
Cam Pin.....$16.21

16 - *Aluminum Oil Pan*

Replace your cast pan that leaks with aluminum oil pans. 1 qt. size. Includes: bolts & plug.
OP1.....$111.18

17 - *Billet Aluminum Bearing Closure Plate*
BCP.....$125.46

18 - *Billet Aluminum Cam Cover*

For single cylinder Kohler.
Includes gasket.
Cam Cover.....$61.91

19 - *Rear Bearing*
R22RS.....$52.39

20 - *Rear Double Bearing Cup*
DBC-R.....$17.99

21 - *Aluminum Tappet Cover*

Includes gasket.
TCA.....$16.21

22 - *Governed Flywheel*

8" flywheel weighs 37 lbs. To be used on a governed motor, also works well on stock altered and lite pros.
F37.....$167.00

Large Steel Flywheel

For ring gear starters. Weighs 19 lbs. with ring gear comparable to stock flywheel weight.
F19.....$167.00

Large Heavy Steel Flywheel

For stock and stock altered blocks. Has steps for your ring gear. A little heavier than stock for more upper-end power. Weighs 32 lbs.
F25.....$167.00

8" Steel Flywheel

Weighs 20 lbs. Does NOT accept ring gear.
F20.....$147.00

23 - *Billet Aluminum Clutch Hub*
4 bolt or dowel pin versions available.
Clutch Hub.....$57.63

1.5" Liquid-Filled Fuel Pressure Gauge

Measures 0 - 15 lbs.
Midwest Super Cub brand.
FPG.....$21.18

Chevy Points Bracket with Cover

Make points and timing adjustments easily with this Chevy points coversion bracket. Unit replaces points bracket on 8 - 16hp Kohler engines. Enables you to use Chevy points. 32 oz. Accel points recommended.
PT.....$21.29
Points cover only
PTC.....$7.65

32oz. Accel Points for Chevy Points Bracket

High tension spring prevents points float. Includes Accel High Performance Condenser.
Points.....$61.89

Fuel Tank

Plastic 2.5 qt. fuel tank with bottom 3/8" feed nipple top return line. Includes: wire mounting rack, lid, and fuel line. Tank dimensions: 8" tall, 6" wide, and 5" deep.
PFT.....$37.70
Fuel Line (Replacement fuel line only).....**$2.00/ foot**

Degree Wheel

These wheels provide exceptional precision and accuracy.
DW.....$26.66

CenPeCo Gard-N-Go Oil

Specially blended for air-cooled single cylinder engines. Also an excellent choice for v-twin engines. Will help protect lifters and camshaft.

S20 (20 wt. quart)
S30 (30 wt. quart).....**$8.25**
C20 (20 wt. case)
C30 (30 wt. case).....**$91.00**

Crank Nut

Sold individually. 3/4" fine thread. Not stock size

Crank Nut.....**$6.25**

Replacement Rod Bolts

Sold in a set of 4 (2 long & 2 short).

Rod Bolts.....**$50.64**

Voodoo Dual Fire Coil

Replaces Harley coil. U.S.A. Made.

Voodoo1.....**$89.76**

Super Coil

High output, internal resistor.
3 ohm coil. Replaces Bosch coil. U.S.A made.

Coil.....**$65.28**

Crank Trigger Ignition

For single cylinder engines. Kit includes: magnet ring, bracket, and module. Easy installation. Buyer must specifiy diameter of PTO end of crank at the block.
*****_MWSC crank requires a 1.5" ring._

EI.....**$97.92**

Port Support Plate for Kohler Engines

A 1/4" thick aluminum plate that bolts on the side of the Kohler engine to support the port on large port/ large valve engines.

PS.....**$44.63**

Head Hold Down for Kohler Engines

Fits 10 - 16 HP engines.

HHD.....**$52.28**

Economy Exhaust Flanges

For the do-it-yourself person. For 10 - 14 hp and 16 hp Kohler engines. Bolts onto the engine and a pipe can be welded to the flange. EXF 12 comes with copper gasket.

EXF12 (10 - 14 hp)
EXF16 (16 hp).....**$12.66**

Exhaust Flanges with Bolts

10 - 14 hp Kohler with copper gasket

XF12 (10 - 14 hp Kohler with copper gasket).....**$39.78**
XF16 (16 hp Kohler).....**$41.57**
XF34 (Aftermarket blocks).....**$39.78**

Chrome Exhaust Pipes

1 3/8" ID, 1 5/8", and 1 3/4" ID. Mandrel bent chrome plated mild steel tubing.

XP38 (10 - 14 hp)
XP58 (16 hp)
XP34 (Aftermarket).....**$57.63**

Plain Mandrel Bent Pipe

Pipe38 (10 - 14 hp)
Pipe58 (16 hp)
Pipe34 (Aftermarket).....**$25.50**

Exhaust Pipe Covers

Various colors available: red, black, yellow, John Deere green, blue, purple, pink, and orange.

XPC.....**$12.66**

Stock Altered Block

This block replicates the K-341 Kohler block. Features include: increased deck strength, more rigid main bearing areas, and ductile iron material. Weighs 61 lbs.

SA1.....**$898.25**

Useful Facts, Tips, & FAQ's

Piston Oil Rail Supports for V-Twin .750" Pin Height pistons and 1 Cylinder K-Series .875" Pin Height Pistons.
On the .750 pin height pistons, they use oil supports to support the oil ring as it passes over the wrist pin area. These are installed with the dimple on the oil rail facing downward and should be located in the wrist pin area. These oil rail ARE NOT replaced with installing new rings. They don't wear out since they don't touch anything. Oil rails are also used on the .875" pin pistons used in the 1 cylinder Kohler K-Series engines.

What length connecting rod do I need if running a k-series 12hp-16hp factory piston?
5.300"

What is the stock piston pin height for K-Series Kohler 1 cylinder engines?
Stock pin height is 1.700" for the 12, 14 & 16 and the K 361 18HP, the 10HP pistons is 1.62. These along with stock crankshafts, requires a 5.300" connecting rod. A piston with a 1.125" pin height requires a
5.875" rod and a .875" pin height require a 6.125" rod. These will bring the piston flush with the deck
of the block. If you want to pop the piston out order the corresponding rod (i.e. if 5.875" is flush then
6.000" would pop it out .125").

How do I install a starter ring gear on flywheel?
Simply heat the ring gear up with a torch or put in oven until hot. Then drop ring gear onto flywheel, chamfer on inside diameter goes down. To remove starter ring gear, use a punch and tap it off or use an air chisel.

What are the differences between the Kohler 10, 12, 14, 16hp motors(pistons, rods, crankshafts)?
The differences between the OEM 10hp and 12hp, 14hp and 16hp Kohler pistons, rods and crankshafts: The 10hp piston has a compression height of 1.62". The rod when measured from the centerline of each
hole is 5.558" in length. The crankshaft has a stroke of 2.875", wrist pin size is also different.

The 12hp, 14hp and 16hp piston has a compression height of 1.7". The rod when measured from the centerline of each hole is 5.3" in length. The crankshaft has a stroke of 3.25".

The 10hp, 12hp, 14hp and 16hp Kohler blocks all have the same deck height, which is 8.625" (when measured from the centerline of the main bearings to the top of the block.) Crank Trigger bracket holes do not line up on the block.

Our crank trigger bracket is made for two (2) different bolt patterns. The larger pattern is a bolt circle of
5.625" (5 5/8) and the smaller pattern is 5". The customer can either drill or tap their block to one of those patterns or they can modify the bracket if there is room.

On a 1 cylinder K-series Kohler which direction does the rod cap go on the MWSC rod and do you use a bearing?
Rod cap goes on with 1/2 " dish cut goes toward cam or oil hole in rod cap goes to cam or thins side goes toward cam. Longer Bolts go on this side. All our rods are made to use a rod bearing we offer standard, .10, .20 & .30 under. In other words the thin side of the rod goes toward the camshaft.

Using Accel Points, where should I start with the timing?
Start at 26 degree ignition timing and adjust from there. The timing is set by points gap. The wider the gap the more timing advance. You will need to put some timing marks on the engine.

On a 1 cylinder K-series Kohler, what is the minimum valve clearance to the head?
.030" to .050".

Is a 10 HP rod different than 12-16 HP motors?
Yes. 10HP rod length is different and we do offer aftermarket standard length rods for them that accept a rod bearing. The 10hp rod is 5.562 long and has a smaller wrist pin (.859") instead of the standard Kohler of .875".

What size socket goes on the MWSC rod cap bolt?
5/16" 12 point socket available at Sears, Matco Tools or Snap On. MWSC rod bolts are torqued to 20 ft lbs and is typically engraved on the rod.

What should the plug gap be set for a Stock or Stock Altered Tractor?
Start at about 30-35, not terribly important. They will run with as low as a .010" gap to as wide as .075". Tested quite a few different plugs and don't seem to make any difference on the dyno.

I received my MWSC rotating assembly for a single cylinder and my counterweights are not marked. Does it matter what weight goes on what side of the crank?
The crankshaft does not know the difference. Make sure the weight clears the cam.

Diamond Pistons for Kohler Command

These lightweight forged pistons have a flat top design for increased compression. Includes: piston, 3 rings, piston pin, and clips.

For CV 11 - 14 hp, CV 460 - 465 19mm pin.Fits stock rod and 1CR1130/ 1CR1185. Size: 3.425". Pin height: 1.142".
D1C3425
For CV 15 - 16 hp, CV 490 - 495 19mm pin. Fits stock rod and 1CR1130/ 1CR1185. Size: 3.425". Pin height: 1.142".
D1C3543
For CV 11 - 14 hp, CV 460 - 465 17mm pin. Fits 1CR1229/ 1CR1180/ 1CR1152/ 1CR1272/ 1CR1300. Size: 3.425". Pin height: 0.750".
D2C3425
3.543" for CV 15 - 16 hp, CV 490 - 495 17mm pin. Fits 1CR1229/ 1CR1180/ 1CR1152/ 1CR1272/ 1CR1300. Size: 3.543". Pin height: 0.750".
D2C3543
For sleeved engine. Size: 3.780". Pin height: 0.750".
D2C3780
Size: 3.937". Pin height: 0.750".
D2C3937.....$208.07

Steel Camshaft Blank

Fits our adjustable cam gear. Made of high strength 8620.
1CCB.....$121.38

Shaft Style Roller Rocker Kit

Aluminum roller rockers that are shaft mounted. Bolts directly on to stock head. Includes rocker arm cover gasket.
1CRR.....$126.48

5/16" Pushrods

Various lengths availalbe. Sold in pairs.
1CPR.....$31.70

Roller Lifters

Requires machining. Sold in pairs.
1CRL.....$110.00

Billet Connecting Rods for Kohler Command

Connecting rod features replaceable rod bearing inserts. Crankshaft rod journal will need 1.500" to fit rod bearing. Connecting rods for various set up are listed below: Sold individually.

Stock rod length for 11 - 16 hp. Length: 113.0mm. 1CR1130
Stock rod length for CV 460 - 495. Length: 118.5mm. 1CR1185
Long rod for 11 - 16 hp w/ 0.750" PH piston. Length: 122.9mm. 1CR1229
Long rod for 11 - 16 hp w/ CV 460 crank w/ 0.750" PH piston. Length: 118.0mm. 1CR1180
Rod for 3.25 stroker 11 - 16 hp w/ 0.750" PH piston. Length: 115.2mm. 1CR1152
Rod for 3.25 stroker CV 460 - 495 w/ 0.750" PH piston. Length: 127.2mm. 1CR1272
Rod for 3.25 stroker CV 460 - 495 stock stroke w/ 0.750" PH pston. Length: 130.0mm.
1CR1300.....$157.08

FAQs

Are any modifications required to my k-series block when switching to an aluminum connecting rod? Best ways to attempt an engine build?

I like to dummy assemble every engine I build. This rules out having any issues and having to do it all over again multiple times. Simply install the crank stick and bearing closure plate. Put a light coat of oil or assembly lubricant on the bearing surface. Remove rod cap, pay attention to the cap bolt location(long bolts, short bolts). Install the chamfered rod bearing(will be discussed in another F.A.Q. I like to put a light coat of oil on the backside of the bearings to ease mock up/assembly. Put a light coat of oil on the piston wrist pin and attach piston to rod. Now oil the freshly honed bore. No rings are needed at this time. Rotate the crank stick so that journal is all the way up, we call this top dead center. Slip piston/rod into bore(cut out/thin side towards cam). Now spin crank stick to bottom dead center and install rod cap. Tighten the 5/16 12 point bolts to a snug, torque spec is not needed at this time. Now is time to check connecting rod to cylinder clearance. This can be done with a cutoff wheel. After this step is complete you can go along and degree the camshaft, or at least check it, if using cast crank and cam(stock timing marks). Then check all other clearances, cam lobe to connecting rod, cam lobe to lifter, cam lobe to counter weight, connecting rod side clearance, crank stick end play, valve to cylinder head, cam end play, gap rings to piston manufacturers specs. After everything appears to be happy take it all apart and clean for final assembly. This was a fairly fast run down but MOST of these steps to building an engine will appear on other F.A.Q.S

Carb Casting 1.200" and 1.00" Stock Appearing Kohler Carbs

Set up for alcohol or gas. 1.200"venturi with 1.530" carb butterfly. 1.000" venturi with 1.300" butterfly with aluminum velocity stack.

Carb-A (1.2 Alcohol).....**$361.08**
Carb-G (1.2 Gas).....**$340.68**
Carb-A1 (1.0 Alcohol).....**$361.08**
Carb-G1 (1.0 Gas).....**$340.08**
Carb-Gasket.....**$3.10**

Ram Tube

One inch aluminum ram tube.

RTI.....**$39.86**

Billet Aluminum Air Filter Adaptor - Single Cylinder

This air filter adaptor fits directly onto Kohler carbs. Comes with stainless steel screws. Works with K & N fliter on flange.

VS1.....**$33.66**

K & N High Performance Air Filter

Fits our bolt on v-stack. Clamp on fliter that 7"diameter by 6"long. Carb mounting centered on filter. Flanges width 1 5/8"wide. Comes with clamps. To be used with the velocity stack for single cylinder or twins. Needs our v-stack.

KN.....**$70.37**

K & N Filter Vinyl Cover

Various colors available: red, black, yellow, and green.

KNC.....**$17.99**

K & N Filter for 2-Barrel

Needs v-stack-2.

KN2Barrel.....**$99.99**

V-Stack Adaptor

For 2-barrel carb to fit K & N air filter.

V-Stack-2.....**$71.27**

Needle & Seat for Kohler Carb

Used in MWSC gas carb.

Needle.....**$16.25**

Throttle Plate Stock

1.300" and 1.530" diameter.

Throttle Plate (+ diameter).....**$4.15**

Throttle Shaft for MSC Carbs

Includes bolts.

Throttle Shaft.....**$34.60**

Main Jet

For MSC and stock carbs.

MainJet.....**$21.18**

Dual Barrel Carb Blank Jets

DB-Single.....**$12.15**
DB-Pack (Jet pack for Kohler 2-barrel carb).....**$30.41**

Throttle Shaft for Stock Carbs

47144365.....**$29.11**

Main Jets for SS Carbs

Sold in a set of three.

117206.....**$26.92**

Carb Gasket for Floatbowl

FBGasket.....**$4.15**

Super D Drop Manifold

1 3/8" x 3" bolt pattern.

DM-Super D.....**$146.88**

Super D Airhorn

170141.....**$88.00**

Command Carb Adaptor

For downdraft command carb to the command vertical intake manifold. The vertical intake manifold nearly twice the air of the horizontal intake manifold.

Carb Adaptor.....$49.96

Command Carb Bracket

For downdraft carb for gas pedal cable. Bolts on in place of solenoid. Sold individually.

Bracket.....$12.66

Command Air Cleaner Adaptor for Stock Carb

V-Twin AC Adaptor.....$37.65

Carb Checkers

NQS Certified. Available in 1.0" and 1.2" sizes.

Check 1 (1.0")

Check 2 (1.2").....$44.63

Airhorn for Super B

Airhorn.....$93.84

Super B Needle

112195.....$13.35

Mixture Adjuster for MSC Main Jet

Adjuster.....$21.03

Carb Conversion Kit

Changes MSC carbs from gas to alcohol.

Carb Kit.....$17.99

Super D 1" Carb Spacer

Carb D 1" Spacer.....$56.76

Holley Fuel Pump

For gas and alcohol. Polished aluminum universal fit.

Fuel Pump.....$189.72

Holley Fuel Pressure Regulator

1-4# tumble polished single inlet, dual outlet 3/8 NPT (National Pipe Thread).

Regulator.....$42.84

S & S Super D Carb Assembly

Requires use of a low pressure fuel regulator. Needs less than 1 lb of fuel pump pressure. Comes with 4" long velocity stack.

Carb-D.....$615.06

Super D Float

112187.....$23.47

Conversion Set Up for Super D

For 3 lb pressure and correct jet. Done in house only.

DConversion.....$42.00

Super D Manifold

Adapts carb to the aftermarket blocks. 6" length. Uses four bolt flange on engine. 1 3/8" x 3" bolt pattern.

Manifold.....$146.88

Aluminum Super Carb

Cast aluminum 58mm carb with 60.3mm throttle bore butterfly. Larger than the S & S Super D carb which is 50mm.

Carb-58.....$733.38

Balancing Rotating Assembly

For single cylinder and v-twin engines. Piston, rod, rod bearing, crank, and heavy metal (priced per slug).

Balancing.....$131.25
3/4" x 1" Heavy Metal.....$42.00
3/4" x 1.2" Heavy Metal.....$44.10

Bore and Hone Single Cylinder Block

Bore & Hone.....$70.00

Bore and Hone V-Twin Block

Bore & Hone Twin.....$95.00

Bore and Sleeve

V-twin bore block. Installation of sleeves and hone.

Bore and Sleeve.....$285.00

Deck Cylinder Head

Priced individually.

Decking.....$30.00

Machine Block for Roller Lifters

Machine Block for Roller Lifters.....$90.00

Machine Head for Larger Seats

Includes installing and cutting seat (EACH SEAT). ***Seat not included.***

Machine Head for Larger Seats.....$80.00

Cut Seats for Oversize Valves

One pair of heads - four seats.

Machine Seats for Oversize Valves.....$85.00

Machining Pistons

Machining pistons for valve clearance.

Machining.....$65.00

Machining for Roller Rockers

Machining head for roller rockers.

Roller Rocker.....$62.00

Port and Polish

Port and Polish.....$250.00

Command Port and Polish

Port and Polish.....$183.75

Crank Grinding

Grind crank to customer specifications or to clean the crank.

Crank Grinding.....$50.00

Cut Head for O-Ring Material

O-Ring.....$42.00

Cam Pro Check

Cam Pro.....$30.00

Dyno Engine Tuning

Hourly rate.

Dyno.....$50.00

Look for the
Midwest Super Cub
booth at the National Farm
Machinery Show
February 11-14th, 2015

HALF PINT CHASSIS & MIDWEST SUPER CUB APPAREL

Half Pint Chassis Packages

1. Assembly-ready frame rails with instructional DVD. Includes pre-drilled holes for transmission and engine.

Single cylinder Kohler.....$300.00
V-twin command.....$325.00

2. Complete half-pint frame ready for engine, clutch, and transmission.

Single cylinder Kohler....$1,500.00
V-twin command.....$1,550.00

3. Complete turn key half-pint tractor. Includes: engine, 4-speed transmission with drop box, 10 puck clutch, 3.50 x 6 tri-rib tires on Douglas Wheels front wheels, 26 x 12 x 12 LawnTec mounted tires on Douglas Wheels rear wheels, wheelie bars, and hitch. Choice of over 50 different color options. Call to place an order or for for more information.

Complete turn key.....$13,500.00

Midwest Super Cub Apparel

Colors, styles, and sizes vary. Call to place an order or for more information. ***20th anniversary apparel coming soon!***

Call to place your order today! 1(563)659-5276

Baseball cap
NQS pullers baseball cap.....$12.00

Sew-on patches.....$5.00

T-shirt.....$12.00
Hooded sweat shirt.....$25.00

Sweat pants.....$15.00

GIFT CERTIFICATES AVAILABLE!

Any occasion, any amount, any time.
Call to order one today!
NO EXPIRATION DATE!

Events:

2015 Events.....$40
2014 Events.....$40
2013 Events.....$20

Our Event DVDs is a 2 disc set fully edited with puller names and distances displayed on the video before and after the hook. Other features include: per hook chapters for easy browsing, Ending standings, Sled Cam, Time Lapse.

Our Learn How Now series of DVDs offers clear step by step instructions to help you accomplish the task at hand.

Learn How Now:

2/3 swap transmission assembly.....$20
3 Speed transmission assembly.....$20
4 Speed transmission assembly.....$20
Degree a Cam,(single cylinder or V-Twin).....$20

TEC Tach

Our Tach is all new this year. The bezel is now Billet Aluminum, and the face-plate is now made from glass. Also the LED's are white instead of green.

•New tach differs from picture

- **90 seconds of recording time**
- **Maunal or auto record trigger**
- **Volt Meter**
- **Integrated Shift light functionality**
- **On device playback only**
- **Size is now a five inch diameter**
- **Stud mount from rear of tach**

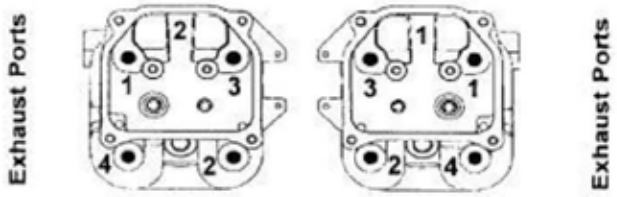
5,500 RPM Tach- TT5-550
10,000 RPM Tach- TT5-100
12,800 RPM Tach- TT5-128
16,000 RPM Tach- TT5-160

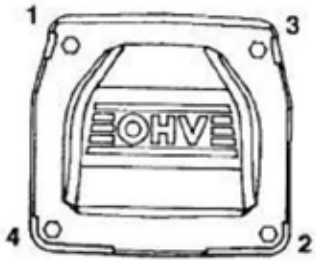
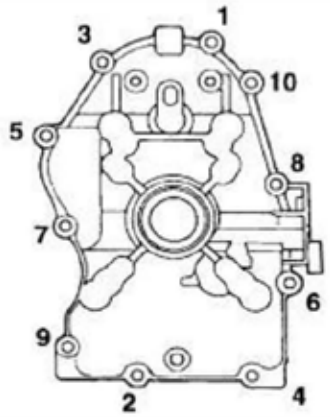
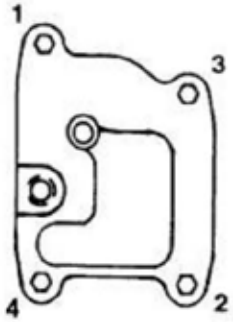
Price: $250

Tachs Available in May

$9.95 FLAT RATE SHIPPING!
CALL TO ORDER 1(563)659-5276

V-Twin Torque Guide

Model (Horsepower)		CH & CV18 (18)	CH & CV20 (20)	CH & CV22 (22)	CH & CV25 (25)
Breather Plate		7.3 N-rn (65 in. lb.)			
Carburetor Mounting Nuts		9.9 N·m (88 in. lb.)			
Charging Stator Mounting Screw		4.0 N-rn (35 in. lb.)			
Connecting Rod Cap Fastener Torque		8mm straight 22.7 N-rn (200 in. lb.), 8mm step-down 14.7 N-rn (130 in. lb.), 6mm straight 11.3 N-m (100 in. lb.) MWSC RODS 20 FT LBS.			
Closure Plate (CH)/Oil Pan (CV)		24.4 N-rn (216 in. lb.)			
Cylinder Head	Fastener	40.7 N-rn (30 ft. lb.)[2]			
		Exhaust Ports  Exhaust Ports			
	Rocker Pedestal (Pivot)	11.3 N-rn (100 in. lb.)			
Electric Starter Mounting		15.3 N-rn (135 in. lb.)			
Flywheel	Fan Fasteners	9.9 N-rn (88 in. lb.)			
	Retainer Screw	66.4 N-rn (49 ft. lb.)			
Ignition	Spark Plug	24.4/29.8 N-rn (18/22 ft. lb.)			
	Ignition Module	4.0*/6.2 N-rn (35*/55 in. lb.)			
Manifold (Intake)		9.9 N·m (88 in. lb.)			
Muffler Retaining Nuts		24.4 N-rn (216 in. lb.)			
Rectifier Fasteners		4.0 N-rn (35 in. lb.)			
Oil Filter	Oil Filter	5.7/9.0 N-rn (50/80 in. lb.)			
	Oil Drain Plug (1/8" NPT)	13.6 N-rn (10 ft. lb.)			
	Oil Sentry™ Switch	7.9 N-rn (70 in. lb.)			
Throttle/ Choke Controls	Governor Control Lever	9.9 N-rn (88 in. lb.)			
	Speed Control Assembly	7.3*/10.7 Nrn (65*/95 in. lb.)[1]			
Valve Cover	Gasket/Sealant Type	3.4 N-rn (30 in. lb.)			
	O-Ring Type	7.9 N-rn (70 in. lb.)			

Valve Cover	Closure Plate (CH)/Oil Pan (CV)	Breather Plate
		

KOHLER 10HP ENGINE SPECIFICATIONS

ENGINE BORE	3.25		ENGINE DISPLACEMENT	
ENGINE STROKE	2.875		CUBIC INCH	23.85
ROD LENGTH	5.563		CC'S	391
PISTON PIN HEIGHT	1.625			
HEAD & GASKET CC	68		ROD ANGLE RATIO	1.93
PISTON HEIGHT OUT OF BLOCK	0.000		COMPRESSION RATIO	6.75
DECK HEIGHT OF BLOCK	8.625			
	INDICATED ***ROD LENGTH*** FOR GIVEN PISTON HEIGHT			5.5625
	INDICATED ***PISTON HEIGHT*** FOR GIVEN ROD LENGTH			1.625

KOHLER 12HP ENGINE SPECIFICATIONS

ENGINE BORE	3.375		ENGINE DISPLACEMENT	
ENGINE STROKE	3.25		CUBIC INCH	29.08
ROD LENGTH	5.300		CC'S	476
PISTON PIN HEIGHT	1.700			
HEAD & GASKET CC	85		ROD ANGLE RATIO	1.63
PISTON HEIGHT OUT OF BLOCK	0.000		COMPRESSION RATIO	6.61
DECK HEIGHT OF BLOCK	8.625			
	INDICATED ***ROD LENGTH*** FOR GIVEN PISTON HEIGHT			5.300
	INDICATED ***PISTON HEIGHT*** FOR GIVEN ROD LENGTH			1.700

KOHLER 14HP ENGINE SPECIFICATIONS

ENGINE BORE	3.5		ENGINE DISPLACEMENT	
ENGINE STROKE	3.25		CUBIC INCH	31.27
ROD LENGTH	5.300		CC'S	512
PISTON PIN HEIGHT	1.700			
HEAD & GASKET CC	85		ROD ANGLE RATIO	1.63
PISTON HEIGHT OUT OF BLOCK	0.000		COMPRESSION RATIO	7.03
DECK HEIGHT OF BLOCK	8.625			
	INDICATED ***ROD LENGTH*** FOR GIVEN PISTON HEIGHT			5.300
	INDICATED ***PISTON HEIGHT*** FOR GIVEN ROD LENGTH			1.700

KOHLER 16HP ENGINE SPECIFICATIONS

ENGINE BORE	3.75		ENGINE DISPLACEMENT	
ENGINE STROKE	3.25		CUBIC INCH	35.90
ROD LENGTH	5.300		CC'S	588
PISTON PIN HEIGHT	1.700			
HEAD & GASKET CC	98		ROD ANGLE RATIO	1.63
PISTON HEIGHT OUT OF BLOCK	0.000		COMPRESSION RATIO	7.00
DECK HEIGHT OF BLOCK	8.625			
	INDICATED ***ROD LENGTH*** FOR GIVEN PISTON HEIGHT			5.300
	INDICATED ***PISTON HEIGHT*** FOR GIVEN ROD LENGTH			1.700

Rod Guide

Stroke	Rod	Pin Height	Pop Out	Pop Out	Stroke	Rod	Pin Height
2.875	6.125	1.125	0.0625	Flush	3.000	6.250	0.875
2.875	6.187	1.125	0.125				
				0.02	3.165	6.187	0.875
3.000	6.000	1.125	Flush	0.083	3.165	6.250	0.875
3.000	6.031	1.125	0.031				
3.000	6.125	1.125	0.125	Flush	3.250	6.125	0.875
				0.062	3.250	6.187	0.875
3.165	5.906	1.125	-0.012	0.125	3.250	6.250	0.875
3.165	5.937	1.125	0.019				
3.165	6.000	1.125	0.0825	0.062	3.375	6.125	0.875
3.165	6.031	1.125	0.113	0.125	3.375	6.187	0.875
3.250	5.875	1.125	Flush	Flush	3.500	6.000	0.875
3.250	5.906	1.125	0.03	0.031	3.500	6.031	0.875
3.250	5.937	1.125	0.062	0.125	3.500	6.125	0.875
3.250	5.968	1.125	0.093				
3.250	6.000	1.125	0.125	Flush	3.625	5.937	0.875
				0.03	3.625	5.968	0.875
3.375	5.812	1.125	Flush	0.062	3.625	6.000	0.875
3.375	5.875	1.125	0.0625	0.093	3.625	6.031	0.875
3.375	5.906	1.125	0.093				
3.375	5.937	1.125	0.125	Flush	3.680	5.906	0.875
				0.027	3.680	5.937	0.875
3.500	5.750	1.125	Flush	0.09	3.680	6.000	0.875
3.500	5.812	1.125	0.062	0.121	3.680	6.031	0.875
3.500	5.875	1.125	0.125				
				Flush	3.750	5.875	0.875
3.625	5.688	1.125	Flush	0.031	3.750	5.906	0.875
3.625	5.750	1.125	0.062	0.062	3.750	5.937	0.875
3.625	5.812	1.125	0.125	0.093	3.750	5.968	0.875
				0.125	3.750	6.000	0.875
3.680	5.750	1.125	0.09				
				Flush	3.875	5.812	0.875
3.750	5.750	1.125	0.125	0.062	3.875	5.875	0.875
				0.093	3.875	5.906	0.875
				0.125	3.875	5.937	0.875
				0.03	3.937	5.812	0.875
				0.093	3.937	5.875	0.875
				0.125	3.937	5.906	0.875
				Flush	4.000	5.750	0.875
				0.062	4.000	5.812	0.875
				0.125	4.000	5.875	0.875
				0.045	4.090	5.750	0.875
				0.107	4.090	5.812	0.875

Gear Ratio Chart

CUB CADET GEAR RATIOS

Stock Cub Cadet 12/84

Top Shaft Tooth Count	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Bottom Shaft Tooth Count	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25
Final Gear Ratio	96.6	87.4	79.4	72.5	66.3	60.8	55.9	51.5	47.5	43.9	40.6	37.6	34.8	32.2	29.8
26/12/12 mph	4.1	4.6	5.0	5.5	6.0	6.6	7.2	7.8	8.4	9.1	9.9	10.7	11.5	12.4	13.4
23/10.50/12 mph	3.5	3.9	4.3	4.7	5.2	5.6	6.1	6.6	7.2	7.8	8.4	9.1	9.8	10.6	11.5

20% Underdrive 10/86

Top Shaft Tooth Count	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Bottom Shaft Tooth Count	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25
Final Gear Ratio	118.7	107.4	97.6	89.0	81.4	74.7	68.7	63.3	58.4	53.9	49.9	46.2	42.7	39.6	36.6
26/12/12 mph	3.4	3.7	4.1	4.5	4.9	5.4	5.8	6.3	6.9	7.4	8.0	8.7	9.4	10.1	10.9
23/10.50/12 mph	2.9	3.2	3.5	3.8	4.2	4.6	5.0	5.4	5.9	6.3	6.9	7.4	8.0	8.7	9.3

10% Underdrive 11/85

Top Shaft Tooth Count	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Bottom Shaft Tooth Count	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25
Final Gear Ratio	106.6	96.5	87.7	80.0	73.2	67.1	61.7	56.9	52.5	48.5	44.8	41.5	38.4	35.5	32.9
26/12/12 mph	3.8	4.1	4.6	5.0	5.5	6.0	6.5	7.0	7.6	8.3	8.9	9.7	10.4	11.3	12.2
23/10.50/12 mph	3.2	3.5	3.9	4.3	4.7	5.1	5.5	6.0	6.5	7.1	7.6	8.3	8.9	9.6	10.4

One Faster Pinion Gear 13/84

Top Shaft Tooth Count	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Bottom Shaft Tooth Count	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25
Final Gear Ratio	89.2	80.7	73.3	66.9	61.2	56.1	51.6	47.6	43.9	40.5	37.5	34.7	32.1	29.7	27.5
26/12/12 mph	4.5	5.0	5.5	6.0	6.5	7.1	7.8	8.4	9.1	9.9	10.7	11.5	12.5	13.5	14.5
23/10.50/12 mph	3.8	4.2	4.7	5.1	5.6	6.1	6.6	7.2	7.8	8.4	9.1	9.9	10.7	11.5	12.4

10% Overdrive 13/83

Top Shaft Tooth Count	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Bottom Shaft Tooth Count	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25
Final Gear Ratio	88.1	79.7	72.4	66.1	60.5	55.5	51.0	47.0	43.4	40.0	37.0	34.3	31.7	29.4	27.2
26/12/12 mph	4.5	5.0	5.5	6.1	6.6	7.2	7.8	8.5	9.2	10.0	10.8	11.7	12.6	13.6	14.7
23/10.50/12 mph	3.9	4.3	4.7	5.2	5.7	6.2	6.7	7.3	7.9	8.5	9.2	10.0	10.8	11.7	12.6

16% Overdrive 14/82

Top Shaft Tooth Count	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Bottom Shaft Tooth Count	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25
Final Gear Ratio	80.8	73.1	66.5	60.6	55.5	50.9	46.8	43.1	39.8	36.7	34.0	31.4	29.1	26.9	24.9
26/12/12 mph	5.0	5.5	6.0	6.6	7.2	7.9	8.6	9.3	10.1	10.9	11.8	12.7	13.8	14.9	16.0
23/10.50/12 mph	4.2	4.7	5.1	5.6	6.2	6.7	7.3	7.9	8.6	9.3	10.1	10.9	11.8	12.7	13.7

23% Overdrive 15/81

Top Shaft Tooth Count	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Bottom Shaft Tooth Count	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25
Final Gear Ratio	74.5	67.4	61.3	55.9	51.1	46.9	43.1	39.7	36.7	33.9	31.3	29.0	26.8	24.8	23.0
26/12/12 mph	5.4	5.9	6.5	7.2	7.8	8.5	9.3	10.1	10.9	11.8	12.8	13.8	14.9	16.1	17.4
23/10.50/12 mph	4.6	5.1	5.6	6.1	6.7	7.3	7.9	8.6	9.3	10.1	10.9	11.8	12.8	13.8	14.9

26% Overdrive 13/67

Top Shaft Tooth Count	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Bottom Shaft Tooth Count	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25
Final Gear Ratio	71.1	64.3	58.5	53.3	48.8	44.8	41.2	37.9	35.0	32.3	29.9	27.7	25.6	23.7	22.0
26/12/12 mph	5.6	6.2	6.8	7.5	8.2	8.9	9.7	10.6	11.4	12.4	13.4	14.5	15.6	16.9	18.2
23/10.50/12 mph	4.8	5.3	5.9	6.4	7.0	7.6	8.3	9.0	9.8	10.6	11.4	12.4	13.4	14.4	15.6

33% Overdrive 14/66

Top Shaft Tooth Count	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Bottom Shaft Tooth Count	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25
Final Gear Ratio	65.1	58.9	53.5	48.8	44.6	41.0	37.7	34.7	32.0	29.6	27.3	25.3	23.4	21.7	20.1
26/12/12 mph	6.2	6.8	7.5	8.2	9.0	9.8	10.6	11.5	12.5	13.5	14.6	15.8	17.1	18.5	19.9
23/10.50/12 mph	5.3	5.8	6.4	7.0	7.7	8.4	9.1	9.9	10.7	11.6	12.5	13.5	14.6	15.8	17.0

38% Overdrive 15/65

Top Shaft Tooth Count	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Bottom Shaft Tooth Count	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25
Final Gear Ratio	59.8	54.1	49.2	44.9	41.0	37.7	34.6	31.9	29.4	27.2	25.1	23.3	21.5	19.9	18.5
26/12/12 mph	6.7	7.4	8.1	8.9	9.8	10.6	11.6	12.5	13.6	14.7	15.9	17.2	18.6	20.1	21.7
23/10.50/12 mph	5.7	6.3	7.0	7.6	8.3	9.1	9.9	10.7	11.6	12.6	13.6	14.7	15.9	17.2	18.5

43 % Overdrive 16/64

Top Shaft Tooth Count	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Bottom Shaft Tooth Count	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25
Final Gear Ratio	55.2	49.9	45.4	41.4	37.9	34.8	32.0	29.4	27.2	25.1	23.2	21.5	19.9	18.4	17.0
26/12/12 mph	7.3	8.0	8.8	9.7	10.6	11.5	12.5	13.6	14.7	16.0	17.3	18.6	20.1	21.8	23.5
23/10.50/12 mph	6.2	6.9	7.5	8.3	9.0	9.8	10.7	11.6	12.6	13.6	14.8	15.9	17.2	18.6	20.1

47% Overdrive 17/63

Top Shaft Tooth Count	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Bottom Shaft Tooth Count	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25
Final Gear Ratio	51.1	46.3	42.0	38.4	35.1	32.2	29.6	27.3	25.2	23.2	21.5	19.9	18.4	17.0	15.8
26/12/12 mph	7.8	8.7	9.5	10.4	11.4	12.4	13.5	14.7	15.9	17.2	18.6	20.1	21.7	23.5	25.4
23/10.50/12 mph	6.7	7.4	8.1	8.9	9.8	10.6	11.6	12.5	13.6	14.7	15.9	17.2	18.6	20.1	21.7

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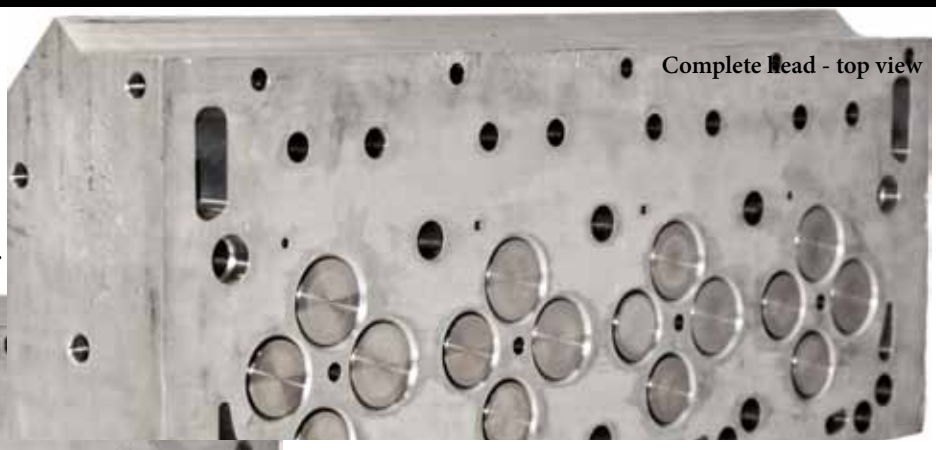

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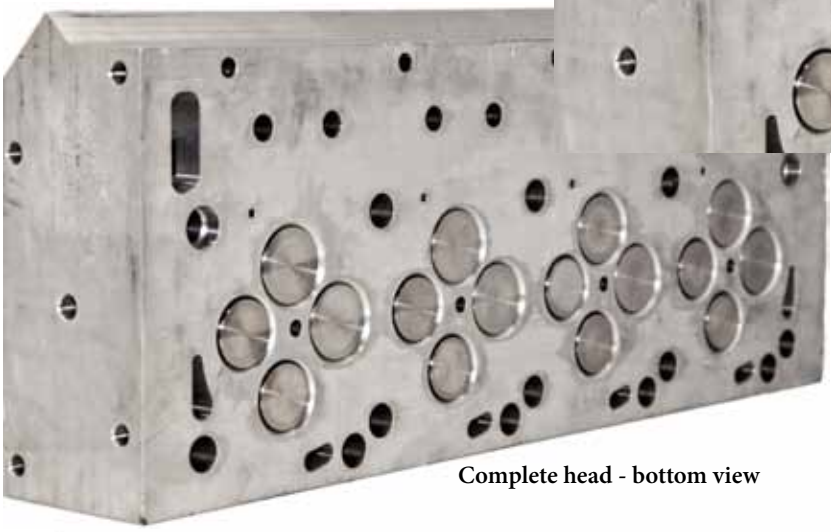

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NQS Pulling
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2015 NQS EVENTS

February 7 White Pine, TN

Walters State Great Smokey Mountains Expo Center, 1615 Pavilion Drive, White Pine, TN 37890

Contact: Jody Possey 1(865)387-1549 www.PoseyPullingTeam.com

Classes: PS, SS, PO, PST, PVT, SA, Outlaw, 5000 Gov. Single, & 5000 Gov. Twin

March 6 & 7 Tallmadge, OH

Summit County Fairgrounds, 229 E Howe Road, Tallmadge, OH 44278

Contact: Julian Stahl 1(563)659-5276 www.NQSpulling.org

Classes: PS, SS, PO, PST, PVT, SA, Outlaw, 5000 Gov. Single, & 5000 Gov. Twin

**For any other NQS classes not listed above, if there are 5 or more tractors the class will be added.*

April 17 & 18 Palmyra, MO

Rockin A Arena 5303 Highway C, Palmyra, MO 63461

Contact: Jeremy Jaspering 1(573)822-4907 www.NQSpulling.org

Classes: TBA

October 2 & 3 Princeton, IN

Gibson County Fairgrounds, 709 N. Embree Street, Princeton, IN 47670

Contact: Susan Hess www.NQSpulling.org

Classes: TBA

November 6 & 7 Liberty, KY

Central Kentucy Ag/ Expo Center, 678 Wallace Wilkinson Blvd, Liberty, KY 42539

Contact: Julian Stahl 1(563)659-5276 www.NQSpulling.org

Classes: PS, SS, PO, PST, PVT, SA, Outlaw

**For any other NQS classes not listed above, if there are 5 or more tractors the class will be added.*

Commonwealth Pullers will be holding classes on Saturday on the 2nd track

1. General Rules

Rules apply to all classes unless otherwise specified.

A. TRACK OFFICALS DECISION WILL BE FINAL. ANY DISAGREEMENT ON THEIR DECISION ON ANY POINT OF CONTROVERSY WILL RESULT IN DISQUALIFICATION FOR THAT CLASS FOR THE DAY.

Comment: The track officials have the final say on what happens on the track.

B. YOUR TRACTOR MUST MEET ALL SAFETY AND SHIELDING REQUIREMENTS PRIOR TO HOOKING OTHERWISE YOU WILL NOT BE ALLOWED TO COMPETE AND THERE WILL BE NO REFUND OF ENTRY.

2. Track Operations:

A. Driver must put his tractor in a neutral position and be hand pushed to the sled. Tractor must be shut down before chain will be unhooked from tractor.

Comment: Flag men will enforce this rule for the safety of the track help. **See Rule 1**.

B. No portion of the tractor shall interfere with the sled hitch during pull.

Comment: Many times the starting line becomes torn up, which will cause the front of the tractor to be lower than the rear tires. This may cause an interference of the cross bar for the wheelie wheels. The intent of the rule is not to interfere once the pull is underway.
See Rule 1.

C. Any portion of tractor touching boundary line during pull will result in disqualification. This would be limited to the front or the rear tires. There is no out of bounds once the tractor passes the full pull mark. **See Rule 1**. The entire tractor must pass the full pull mark.

D. Two attempts will be allowed to start sled except in pull-offs.
One attempt only in a pull-off.

Comment: An attempt is considered once the hook goes in the hitch and driver physically tries to start the tractor in motion by revving up the engine and attempting to release the clutch. **See Rule 1**.

E. The first puller can drop five places which mean he or she will actually start in the 6th position or they can come back immediately. If they do drop, they drop to the 6th position.

F. If a puller has a mechanical problem they have to drop back 6 positions (five more pull then they hook). If there are less than five tractors remaining, they have until the end of the heat plus five (5) minutes. If they are not able to hook within the allotted time they will receive last place in that heat. THE PULLER CAN NOT DROP TO ANOTHER HEAT - it would be unfair to the others in those heats.

G. Driver will be disqualified if he or she delays contest.

Comment: A puller is expected to have their tractor running by the time the sled gets back to the starting point, If the puller delays more than 90 seconds he will have to drop **as discussed in 2-F**.

H. Pulling position will be determined by drawing. The drawing should be done prior to the event for the heats.

I. Driver must remain seated during pull. Drivers must have at least on hand on the steering wheel at all times.

J. Weight transfer sled will be used. Either self-propelled or pull back. Must be a 3 foot chain with the hook point within 2 inches or less of the ground. All slam bars on sleds must be mechanically operated. No air, electrical or hydraulic slam devices accepted. Recommend all sleds be a single axle design. Tandem axle sleds tend to steer tractors once they are turned and tractors are more likely to become uncontrollable than with single axle sleds.

K. Tractors must be operated in a safe manner at all times

L. All weights must be safely secured to the tractor. Any excessive or obvious loss of weights or components may be cause for disqualification. The flagman must make the call during the pull. Any disqualification for loss of weight or component must be made during the pull. A pull is started when the sled starts to

move and is ended when the sled stops movement, even though the tractor may still be under power.

M. Track officials have the right to restart the class anytime within the first seven (7), either for full pulls or short tracking.

N. A tractor can only enter one time per class.

O. A tractor engine can only pull one time during the finals, cannot be switched from one tractor to another ... AKA "The Black Nichols Rule". A puller is able to put in a back up engine, but not from another tractor pulling in the same finals.

3. SAFETY:

A. YOUR TRACTOR MUST MEET ALL SAFETY AND SHIELDING REQUIREMENTS PRIOR TO HOOKING OTHERWISE YOU WILL NOT BE ALLOWED TO COMPETE AND THERE WILL BE NO REFUND OF ENTRY.

B. HELMETS AND FIRESUITS ARE MANDATORY IN ALL CLASSES, MUST BE ZIPPED AND SECURED. Fire suits must be a minimum requirement of SFI 3.2A/1. Helmets must be a minimum requirement of Snell 95.

C. All tractors are required to have a switch that will kill engine and fuel pump in case of chain or hitch breakage. The switch will be located within range of six (6") either side of center of back of tractor with a minimum of a 1.5" circle.

Comment: Make sure it has an adequate size ring in order to ease connecting to sled.

D. All tractors must be equipped with a dead man throttle.

E. A minimum one (1) pound dry chemical fire extinguisher or equivalent. A gauge on the fire extinguisher is required. They can either be dry chemical or CO/2-type extinguisher. The fire extinguisher must be full.

F. All tractors must have a safety device to prevent turnovers. This device is to have wheels or skid plates. Wheels are to be at
least 1" wide and 5" in diameter. Skid plates to have at least 3
square inches at ground contact point. Wheels or skid plates must be no less than 5" (tolerance: -¼") behind the rear tires

and not more than 5"(tolerance: +¼") above the ground. This device must be able to support the weight of the
tractor.

G. All exhaust must discharge vertically and be securely attached.
No more than 10 degrees out of straight upward allowed.

H. ALL engines must have a scatter shield opposite the cam side of the motor; it must be of 1/8 in. steel or 3/16 in. aluminum. It must cover full height and width of block and be attached in a secure manner to frame and head or head plate. See Pro V- twin rules for V-Twin Shielding.

I. All drivers should be clean and neatly attired. Tractors should be clean and painted. Drivers under 18 years of age must have signed parental consent on file.

J. Obvious or excessive consumption of alcoholic beverages or drugs will be grounds for disqualification.

K. All final drive belts must be covered top 180 degrees and all flywheel and clutch assemblies must be covered 360 degrees with 1/8" steel or 3/16" aluminum and be securely fastened to the frame or engine.

L. Engine Dampers must meet requirements of SFI Spec 18.1 is required. A bolt is required to secure damper to crank. FLYWHEELS and STARTER PULLEYS must be of billet steel or aluminum (no cast or stamped steel pulleys). No welded on fins. All starter pulleys must have a retaining device to prevent pulley from coming off crankshaft.

M. All tractors to be equipped with workable brakes.

N. Fenders: Fenders must extend a minimum of 4" in width and must cover the front of tire to its furthest point forward. It is recommended that the foot step be connected to front of fender to avoid your foot being pulled in by the tire.

O. NQS Tech official reserve the right to implement rule changes for safety and health reasons at any time.

4. Chassis:

A. Open to two-wheel drive, rubber tired tractors, no dual wheels, chains or spikes . TIRES MUST BE NO LARGER THAN 26X12X12 FOR ALL TRACTORS.

B. All tractors must have at least a 3" seat back on all seats. Seat back must be rigid enough not to flex down excessively when leaned upon. 45 degree angle max

C. Drawbar will be horizontal and stationary in all directions. With hitching device not more than 3/4" in thickness and must have a 1 1/2" width/depth for hook. Pulling point may not be more than 3/4" from back edge of hitching device parallel to and not more than 13" above the ground.

Comment: Pulling hitch should be made of steel.

D. No portion of any tractor may exceed 6 feet in width. No portion of any tractor (except stock altered) may exceed 8 feet forward of the center of the rear wheel, including weights. Stock Altered is 7 feet forward of the center of the rear wheel.

Comment: No tolerance on the overall length.

E. No weights to extend beyond rear tires. F. All Tractors must have a hood and Grill
5. Fuel:

A. All tractors in all classes are to run Methanol (unless otherwise specified), with no additives. There are two U.S. Federal Grades. Grade A and AA. Either grade is permitted to use. Pullers should ensure that the methanol they purchase meets federal standards of purity. Methanol is tested at all NQS events by various chemical analyses as considered appropriate by the NQS Fuel Tech personnel. Deviation from the standards listed below in the fuel sample will result in disqualification. Methanol is a hygroscopic substance and readily absorbs moisture from the air, which rapidly renders methanol illegal as a fuel for use in NQS pulling. Pullers are cautioned to keep methanol containers tightly sealed at all times to minimize the absorption of water.

B. Specification for Pure Methanol:

Parameter	Grade A	Grade AA
Methanol Content, wt%, min	99.85%	99.85%
Acetone & Aldehydes, ppm, max	30	30
Acetone, ppm, max	20	20
Ethanol, ppm, max.	10	10
Acid(acetic acid), ppm, max	30	30
Water Content, ppm, max	1500	1000
Specific Gravity @ 20 °C	0.7928	0.7928
Permangnate Time, min.	30	30
Residual on evaporation, g/100ml	0.001	0.001

- Odor Characteristic
- Platinum-Cobalt scale, mix: 5:5
- Appearance: Colorless-clear
- Carbonizable impurities

C. Diesel fueled tractors must run diesel only with a dielectric value of no greater than 4.9 or less than 2.2. The dielectric meter shall use Cyclohexane to establish the zero reference point in determining all diesel fuel dielectric constant values. The use of additives containing oxygen, such as nitro methane, propylene oxide, dioxane, MTBE, alcohol (methanol), or nitrous oxide is prohibited. These additives, and others of the oxygen-bearing family, will significantly change the dielectric values of diesel fuel.

D. Gas: must be either VP C-12 or VP C-15 unless otherwise noted. No oxygenated fuels allowed.

E. Fuel Injection is allowed in Super Stock, Nitro 30 Cubes in Lite Pro. Unlimited and Open Super Stock Classes (non-diesel- fueled engines).

F. No pressurized fuel tanks

G. No Nitrous Oxide.

H. Propylene Oxide is prohibited in all classes.

6. Tear Down and Illegal Vehicles

A. All top money winners will have their engines checked for legality. Teching will include, but not limited to the engine. Remember, if you don't want the NQS tech official to see parts of your engine that is not involved with the tear down process, cover it up. Any person who refuses to be inspected for eligibility by routine check of money winners shall not be allowed to enter and/or pull in the class in question until legality is checked. See Rule I.

B. Protest of a competitor's vehicle must be filed in writing to a track official within 15 minutes of conclusion of class. A $250.00 cash protest fee must be submitted at that time. Tear down of protested vehicle must be done by a qualified tech official with the proper testing equipment. Only the tech person and the owner of the protested vehicle are allowed to be present at the time of the tear down. If the vehicle is found to be illegal the protest fee will be returned. If the vehicle is legal the protested vehicle owner will receive the fee. Illegal vehicles will be disqualified for all pertaining classes entered for that event.

C. NQS Tech Officials can overrule any misprints in these rules.

Pro Stock:

1. 1050 lbs max

2. 50.5 $in.^3$

3. Single cylinder Pro-Stock is defined as having a one cylinder, air cooled four cycle flat head, two valves same side, commercially produced manufactured cast block engine. Sleeves and welding permitted. Commercially produced manufactured cast block means made by Kohler, Wisconsin, Briggs, Tecumseh and etc. If copy is

being made, copied block must meet basic manufactures specs for that engine being copied. Crank and cam location, deck height, two valves same side, valve angle (maximum valve angle of 6 degrees), intake and exhaust port location and factory head gasket bolt pattern.

4. No reverse port engines.

5. A stock appearing Kohler type carburetor must be used if other than stock for the model engine being used. Standoff pipe or ram tubes are permitted. Choke may be removed. Single carburetor only. Air restricting venturi must be in stock position and carburetor not to be larger diameter than 1.200". Air controlled by butterfly in stock position in carburetor, no slides, no injection, naturally aspirated only. No air entering after 1.200" restriction. Venturi must be round in shape.

6. Methanol only. See Rule 5.B

7. Wheelbase 56 inches maximum.

8. Overall length 96 inches maximum.

9. Top placing tractors will be checked for, but not limited to: Fuel, Deck Height, Carburetor, Cubic Inch and Factory Head Gasket Bolt Pattern. $in.^3$: 50.500 $in.^3$ zero tolerance. Formula for $in.^3$ is Measured bore x measured bore x measured stroke x .785 = $in.^3$. All bores measured 90 degrees from thrust side. Stock Head bolt pattern, stock head gasket must fit over studs or bolts.

10. 48 cubic inch stock appearing block K-series Kohler engines will be allowed to run with the same weight/hitch as the Pro Stock. 48c.i. engines will have the same rules as the 50.5 Pro stocks, with the following exceptions. Stock Appearing Block K-Series Kohler Engine, open carburetion (no fuel injection), external welding allowed on the blocks (all-thread okay), if engine is sleeved, sleeve cannot be externally visible. Must have head/block restraint.

Super Stock:

1. 1050 lbs max

2. 50.5 $in.^3$

3. Single cylinder Super Stock is defined as any tractor having one cylinder, air cooled four cycle, flat head, two valves same side of engine.

4. No reverse port engines.

5. Any type of Naturally Aspirated induction is permitted.

6. Methanol only. See Rule 5.B

7. Wheelbase 56 inches maximum.

8. Overall length 96 inches maximum.

9. Top placing tractors will be checked for, but not limited to: Fuel and Cubic Inch Limit. 50.500 in^3. Zero tolerance. Formula for cubic inch is Measured bore x measured bore x measured stroke x .785 = Cubic Inch All bores measured 90 degrees from thrust side.

30 Cubic Inch:

1. 950 lbs. max

2. 30 $in.^3$

3. Single cylinder 30 Cube is defined as any tractor having one cylinder, air cooled four cycle, flat head, two valves same side of engine.

4. No reverse port engines.

5. Any type of Naturally Aspirated induction is permitted.

6. Methanol only. See Rule 5.B

7. Wheelbase 56 inches maximum.

8. Top placing tractors will be checked for, but not limited to: Fuel and Cubic Inch Limit. 30.000 in^3. Zero tolerance. Formula for cubic inch is Measured bore x measured bore x measured stroke x .785 = Cubic Inch All bores measured 90 degrees from thrust side.

Pro V-Twin:

1. Maximum engine size is 45.5 cubic inches

2. Engines with aftermarket/and or welded stock heads will run @ 1000# with a 12.5" hitch. Stock head engines with no welding will run @ 1050# with a 13" hitch. On stock head engines only minimal epoxy will be allowed, no excessive use on the external portion of the intake port. Maximum allowable amount would be an area of not more the 1 square inch per head.

3. Engine shielding rules: 1/8" steel or 3/16 aluminum on external side of cylinder extending from head gasket to frame. Shield must be attached to frame at the bottom and to the flywheel shield at the top to make rigid.

4. Wheelbase 56 inches maximum.

5. Overall length 96 inches maximum.

6. Engines: Must be a commercially available lawn and/or garden tractor engine. Only configuration accepted is V-twin type.

7. Carburetor: Limited to one (1) carburetor with one (1) venturi with one (1) throttle butterfly. Maximum venturi size will be 1.200". No air entering after the 1.200" restriction.

8. Steel flywheel mandatory, along with the general flywheel shielding rules of 1/8" steel or 3/16" aluminum 360 degrees.

9. Fuel: Methanol or Gas. See **Rule 5**

Pro Outlaw:

1. NQS Super Stock and NQS Pro V-Twin run together. NQS Super Stock and stock head twins with no welding runs at 1050 lbs with 13" hitch and NQS Pro V-twins with aftermarket or welded heads run at 1000 lbs. and a 12.5" hitch height.
2. These rules can be changed in order to promote fairness of the type's tractors at any time during the season.

PST (Pro/Super/Twin):

1. NQS Pro Stock at 1050# with 13" hitch and NQS Super Stock with open carburetor (no fuel injection) at 1025# with a 12.5" hitch. Pro V-twin stock head no welding tractors run 1000# and 12.5" hitch and 39 cubic inch V-twin can run at 1050# with 13" hitch.

2. 48 cubic inch stock appearing block K-series Kohler engines will be allowed to run with the same weight/hitch as the Pro Stock. 48c.i. engines will have the same rules as the 50.5 Pro stocks, with the following exceptions. Stock Appearing Block K-Series Kohler Engine, open carburetion (no fuel injection), external welding allowed on the blocks (all-thread okay), if engine is sleeved, sleeve cannot be externally visible. Must have head/block restraint.

3. These rules can be changed in order to promote fairness of the type's tractors at any time during the season.

Stock Altered

1. Single cylinder four cycle flathead engines only.

2. Engines must be Kohler, Wisconsin, Tecumseh or Briggs.

3. Engine blocks must have an OEM stock appearance. The current approved blocks are the K-Series Kohler block and the MWSC Stock Altered block. Any new blocks must be submitted to the NQS for approval prior to entry.

4. Engines must be factory productions or their OEM replacement with factory deck height.

5. Stock Head bolt pattern = stock head gasket must fit over studs or bolts.

6. Stock Head bolt location and head bolt size.

7. Maximum crankshaft stroke 3.25"

8. Maximum engine bore 3.780"

9. 36.5000 cubic inch limit

10. Maximum engine valve size 1.380

11. Maximum engine valve lift .330"

12. Maximum carburetor venturi size 1.00", no air entering after 1.00" restriction, venturi must be round in shape.

13. Carburetor must be mounted to the engine with no more than 1" spacer

14. No reverse port engines allowed carburetor must go to the original intake port.

15. Carburetor must be a stock appearing Kohler-type

16. Billet heads permitted

17. Porting and polishing allowed

18. No external welding or external modifications allowed

19. All thread through finned area is acceptable

20. Welding permitted in crankcase area of the block for repair.

21. Methanol only. See Rule 5.B

22. Must run a factory appearing hood and grill.

23. Tractors must have garden tractor rear-ends.

24. Tractors must use stock appearing garden tractor frames.

25. Frames should maintain factory length, but not mandatory.

26. Weight Class 1050 lbs., other weight classes may be pulled.

27. Wheelbase: 52 inches maximum

28. Top placing tractors will be checked for, but not limited to: Fuel, Bore, Stroke, Carb Size, Valve Lift & Valve Size and deck height. Cubic Inch: 36.500 Cu. In. No Tolerance. Formula for CU. IN. is Measured bore x measured bore x measured stroke x .785 = Cu. In. All bores measured 90 degrees from thrust side.

29. If running a factory Kohler produced block the maximum size bore will be 3.830" with a maximum cubic inch of 37.500.

30.

Parameter	Bore	Valve Lift
Measurement	3.780"	0.330"
Tolerance	0.010" must not exceed in³ limit	0.003"

Stroke	Carb	Valve Size
3.250"	1.000"	1.380"
0.010", must not exceed in³ limit	0.001"	0.001"

31. Head Bolt Pattern: Stock Gasket must fit over head studs or bolts.

Outlaw Class:

1. NQS Stock Altered run at 1050# 13" hitch

2. NQS Lite Pro run either at 900# and 12.5" hitch or 925# and a 12" hitch.

3. NQS 30 cubic inch run up to 1100# and 13" hitch.

4. These rules can be changed in order to promote fairness of the type's tractors at any time during the season.

Lite Pro Stock:

1. 950 & 1000 lbs. weight classes. 56" wheel base and 96" overall length.

2. 13 inch hitch height.

3. 37.5 $in.^3$

4. Single cylinder four cycle flathead engines only

5. No reverse port engines.

6. Engines must be Kohler, Wisconsin, Tecumseh or Briggs.

7. Methanol only. See Rule 5.B

8. Engine blocks must have an OEM stock appearance. The current approved blocks are the K-Series Kohler block and the MWSC

Stock Altered block. Any new blocks must be submitted to the NQS
for approval prior to entry.

9. Engines must be factory productions or their OEM replacement with factory deck height.

10. Stock Head bolt pattern =>stock head gasket must fit over studs or bolts.

11. Maximum carburetor venturi size 1.20", no air entering after
1.20" restriction, venturi must be round in shape.

12. Carburetor must be a stock appearing Kohler-type

13. Billet heads permitted

14. Porting and polishing allowed

15. Port welding allowed, but no bore welding.

16. Nitro 30 cubic Inch engines are part of this class. Engines have a maximum venturi size 1.200" for carburetor or 1.200" throat for fuel injected engines. Methanol fueled engines can have any type of Naturally Aspirated induction. For Methanol See Rule 5.B. Only Nitro methane will be accepted for Nitro, no other types allowed. They will pull at the same weight.

17. Top placing tractors will be checked for, but not limited to: Fuel and Cubic Inch Limit. 37.5 in^3. Zero tolerance. Formula for cubic inch is Measured bore x measured bore x measured stroke x .785 = Cubic Inch All bores measured 90 degrees from thrust side.

18. NQS 30 Cubic Inch tractor can run in this class at 1000# with a 13" hitch.

19. Top placing tractors will be checked for, but not limited to: Fuel, Bore, Stroke, Carb Size, head bolt pattern and deck height. Formula for CU. IN. is Measured bore x measured bore x measured stroke x .785 = Cu. In. All bores measured 90 degrees from thrust side

39 Cubic Inch V-Twin:

1. 1050 lbs. max

2. 39 $in.^3$ max

3. Engine shielding rules: 1/8" steel or 3/16" aluminum on external side of cylinder extending from head gasket to frame. Shield must be attached to frame at the bottom and to the flywheel shield at the top to make rigid.

4. Engines: Must be a commercially available lawn and/or garden tractor engine. Only configuration accepted is V-Twin type.

5. Cylinder Head: Must be stock head with no external welding. Only minimal epoxy will be allowed, no excessive use on the external portion of the intake port. Maximum allowable amount would be an area of not more the 1 square inch per head.
6. Carburetor: Limited to one (1) carburetor with one (1) venturi with one (1) throttle butterfly. Maximum venturi size will be 1.200". No air entering after the 1.200" restriction.

7. Steel flywheel mandatory, along with the general flywheel shielding rules of 1/8" steel or 3/16" aluminum 360 degrees.

8. Fuel: Methanol or Gas. See Rule 5.

9. Wheelbase 56 inches maximum.

10. Overall length 96 inches maximum.

11. Top placing tractors will be checked for, but not limited to: Fuel and Cubic Inch Limit. 39 in^3. Zero tolerance. Formula for cubic inch is Measured bore x measured bore x measured stroke x .785 = Cubic Inch All bores measured 90 degrees from thrust side.

Open Super Stock Class:

1. All General Rules and Super Stock Rules apply, except the following: Shielding: Engine shielding rules: 1/8" steel or 3/16" aluminum on external side of cylinder extending from head gasket to

frame. Shield must be attached to frame at the bottom and to the flywheel shield at the top to make rigid. V-Twins: 1/8" steel or 3/16 aluminum on external side of cylinder extending from head gasket to frame. Shield must be attached to frame at the bottom and to the flywheel shield at the top to make rigid.

2. 1050 lbs. max. 56" wheel base and 96" overall length.

3. No motorcycle, aircraft, marine or automotive type engines permitted. Block may be copied, but must meet basic manufactures specifications. OHV or flat head.

4. Maximum of 2 cylinder engines.

5. Maximum of 56 cubic inches.

6. Billet or stock heads allowed.

7. Any type of naturally aspirated induction is permitted. Methanol only.

Unlimited Class:

1. This class is for specific built tractors only. 56" wheel base and 96" overall length.

2. 1150# maximum weight and 13" hitch.

3. Limited to a maximum of 3 cylinders, block and head can be billet, but must be based upon an OEM produced lawn and garden or compact tractor engine.

4. Fuel is limited to methanol or diesel. No pressurized fuel tanks.
Electric vehicles are allowed.

5. Turbocharging or supercharging allowed.

6. 26 x 12 x 12 tire size maximum.

Limited Twin Rules:

1. The intent of this class is to have an economical build that should make similar horsepower and torque as an NQS SS engine for hopefully 1/5 the cost. It is open to v-twin and flat head opposed twin engines.

2. All General rules apply.

3. V-Twin and opposed twin engines. Engines with a factory horsepower rating of 27hp or less.

4. Maximum of 52.5 Cubic Inch or less.

5. Open RPM

6. Any type of ignition is allowed.

7. Fuel is to be pump gas with no additives. No oxygen bearing fuels.

8. Steel flywheels are mandatory.

9. No portion of any tractor may exceed 8 feet forward of the center of the rear wheel, including weights. 56" Wheelbase maximum.

10. Engines must run stock heads (no recast) with no external modifications. V-twin engines must have factory rockers and pushrods. Copper head gaskets are allowed. Factory shrouding is optional.

11. Carb must be stock for make and model of engine, adjustable main jets are allowed. Air cleaner adaptors/velocity stacks are allowed. Two (2) barrel carbs and manifolds are NOT allowed and cannot be used.

12. Maximum tire size is 26x12x12. Tire cutting allowed.

13. Weight class is 1050 lbs. Some pulls may allow more than one weight class.

14. Must use stock appearing garden tractor frame, but may be modified for engine installation. Aftermarket sheet metal is allowed.

5000 Governor Class:

V-Twin 5000 Governor:

1. 1050lbs. max. 56" wheel base and 96" overall length.

2. 30 HP Block Max - Must be garden tractor block. No recast, billet or plated heads.

3. No welding on outside of heads. Putty permitted.

4. Stock manifolds only - 2 barrel, plastic, horizontal or vertical. Must have factory part number. No homemade plenums. Carb/manifold spacers are allowed. Carb - 1.200 Venturi max. Single or two barrel carbs permitted.

5. Factory electronic fuel injection for make and model is allowed.

6. Any ignition is allowed.

7. Electric fuel pumps allowed.

8. Fuel: Gas or methanol.

9. Any 26x12x12 tire allowed.

10. All General Safety Rules apply.

1 Cylinder 5000 Governor:

1. 1050lbs. max. 56" wheel base and 96" overall length.

2. Factory or OEM Block only 16 HP Block Max. No aftermarket blocks
Allowed. No welding on blocks allowed.

3. Recast or billet heads allowed.

4. Carb - 1.200 Venturi max.

5. Any ignition is allowed.

6. Electric fuel pumps allowed.

7. Fuel: Gas or methanol.

8. Any 26x12x12 tire allowed.

9. All General Safety Rules apply.

Hot Stock:

V-Twin rules HOT STOCK:

16. V-Twin and Opposed Twin Engines Only. Engines with a factory horsepower rating of 25hp or less, they are governor to a maximum RPM of 4,500 RPM.

17. Fuel is to be VP C-12 (green in color) with no additives.

18. Steel flywheels are mandatory.

19. No portion of any tractor may exceed 7 feet forward of the center of the rear wheel, including weights. 52" Wheelbase maximum.

20. Limited to stock factory stroke for that model engine with a maximum over bore of 1mm or less. Opposed flathead engines are limited to .030" over-bore. Must run stock heads (no recast) with no external modifications. Engine must be stock appearing on the outside of the engine. Factory shrouding is optional.

21. Maximum tire size is 26x12x12. Tire cutting allowed.

22. Weight class is 1050 lbs.

23. Carb must be stock appearing for make and model being entered. Velocity stacks allowed. Maximum carburetor venturi size 1.00", no air entering after 1.00" restriction, venturi must be round in shape. 2 barrel carbs allowed if factory equipped and with each venturi is smaller than 22mm. No external modifications to stock intake manifold. No standoff (ram tubes) permitted.

24. Must use stock appearing garden tractor frame, but may be modified for engine installation. Aftermarket sheet metal is allowed.

1 cylinder rules HOT STOCK:

1. All General rules apply, except for the following:Fire suits are not required, but helmets are required.

2. Engines are governor to a maximum RPM of 4,500 RPM . RPM will be checked after the tractor makes its run, no tolerance

3. Two (2) classes, 14HP and below and 15HP rating and above..
Stock Blocks only, no aftermarkets.

4. Fuel is to be VP C-12 (green in color) with no additives. The NQS uses dielectric test, hydrometer test and acid test for the fuel check.

5. Steel flywheels are mandatory.

6. No portion of any tractor may exceed 7 feet forward of the center of the rear wheel, including weights. 52" wheelbase maximum.

7. No internal engine restrictions, except must be stock stroke for make and model being entered. Engine block must be stock OEM. Must run stock heads (no recast), head hold downs and all thread through cooling fins are allowed. No external cam pins. Aftermarket points and electronic ignition allowed. Engine block must be totally stock appearing on the outside of block, copper head gasket is allowed.

8. Maximum tire size is 26x12x12. Tire cutting allowed.

9. Weight class is 1050 lbs.

10. Carb must be stock appearing. Velocity stacks allowed.
Maximum carburetor venturi size 1.00", no air entering after 1.00" restriction, venturi must be round in shape. No stand off (ram tubes) permitted.

11. Must use stock appearing garden tractor frame, but may be modified for engine installation. Aftermarket sheet metal is allowed.

Factory Stock:

V-Twin rules Factory Stock:

25. All General rules apply, except for the following: No fire suits are required, but helmets are.

26. V-Twin and Opposed Twin Engines Only. Engines with a factory horsepower rating of 25hp or less, they are governor to a maximum RPM of 4,250 RPM.

27. Fuel is to be pump gas with no additives. No oxygen bearing fuels.

28. Steel flywheels or Stock flywheels, if rules are modified to allow more than 4,250 RPM, then steel flywheels are mandatory.

29. No portion of any tractor may exceed 7 feet forward of the center of the rear wheel, including weights. 52" Wheelbase maximum.

30. Limited to stock factory stroke for that model engine with a maximum over bore of 1mm or less. Opposed flathead engines are limited to .030" over-bore. Must run stock heads (no recast) with no external modifications. Engine must run all stock factory internal parts for make and model being entered. Must have factory rockers, lifters, valves, valve springs and pushrods. Pistons must have factory unaltered dish. Copper head gaskets and adjustable main jets are permitted. Factory shrouding is optional.

31. Carb must be stock unaltered, adjustable main jets are allowed. Air cleaner adaptors/velocity stacks are allowed.

32. Maximum tire size is 26x12x12. Tire cutting allowed.

33. Weight class is 1050 lbs. Some pulls may allow more than one weight class.

34. Must use stock appearing garden tractor frame, but may be modified for engine installation. Aftermarket sheet metal is allowed

1 cylinder rules Factory Stock:

12. All General rules apply, except for the following: Fire suits are not required, but helmets are required.

13. Engines are governor to a maximum RPM of 4,250 RPM.
Classes will be 14 hp and less and 15hp and above. RPM will be checked after the tractor makes its run, no tolerance. Stock Blocks only, no aftermarkets.

14. Fuel is to be pump gas with no additives. No oxygen bearing fuels.

15. Steel flywheels or Stock flywheels, if rules are modified to allow more than 4,250 RPM, then steel flywheels are mandatory.

16. No portion of any tractor may exceed 7 feet forward of the center of the rear wheel, including weights. 52" wheelbase maximum.

17. No internal engine modifications. Must use stock factory parts for make and model being entered. Copper head gaskets are allowed. Engine block must be stock OEM. Must run stock heads (no recast), no head hold downs, no all thread through cooling fins, no external cam pin. Engine block must be totally stock appearing on the outside of block.

18. Maximum tire size is 26x12x12. Tire cutting allowed.

19. Weight class is 1050 lbs.

20. Carb must be stock appearing. Velocity stacks allowed.
Maximum carburetor venturi size 1.00", no air entering after 1.00" restriction, venturi must be round in shape. No stand off (ram tubes) permitted.

21. Must use stock appearing garden tractor frame, but may be modified for engine installation. Aftermarket sheet metal is allowed.

Limited Pro Stock Diesel Class:

1. Engine must be commercially produced with at least 1000 units built. Engines may be no more than 3 cylinders. May be liquid or air cooled. Engine block must have factory casting model and serial numbers visible and not ground off. Ag or industrial engines only; no automotive or motorcycle engines. No cut down 4 cylinder engines allowed.

2. Engine will be no more than 70 cubic inches. This is based on the factory casting numbers. No sleeving down or de-stroking larger engines.

3. Water injection will be allowed. Must be plain water only.
Combustible agents (alcohol, oxygenators) are NOT allowed in water injection. Soluble oil Lube additives are permitted.

4. Engine modifications are permitted = Rods, Pistons, Cam, Fuel system.

5. Engine must have OEM intake manifolds and exhaust manifolds, polishing is permitted. No tube headers or intakes.

6. Head work is permitted on stock OEM heads. No Billet heads. No overhead cams. Must be indirect injection. No converting from indirect to direct. Injectors must remain in stock location.

7. Injector and injector pump modifications allowed. No Billet injector pumps.

8. Must be "Cam Box" or "PFR" injection pump. No electronic or common rail injection systems.

9. Turbo charging is permitted, but limited to a single turbo only. Turbo will be fitted with a shut down guillotine on the compressor inlet side of the turbo. Exhaust "L" of turbo must have minimum of 5/16" cross in elbow with exhaust to discharge vertically.

10. Electric fuel supply pump is permitted with positive power wire to have shut off disconnect at rear of tractor.

11. No propane, nitrous injection or any type of secondary fuel system of any kind will be permitted.

12. All tractors must be compression ignition and use Diesel fuel only. No spark plugs or alcohol as a fuel. Diesel fuel must be NTPA or NQS legal.

13. Stock frames, stock appearing frame rails, and tube frames are permitted. Tube frames must be covered with sheet metal.

14. This class is for stock appearing tractors with full hood, grill and side shields. Must be recognizable as an actual modern production garden tractor or small farm tractor. Hood and grille can be from a different make than frame/rear end. Has to look like a tractor.

15. Must use garden tractor drive line components, modifications are allowed. Internal gears, front reduction housing and planetaries are allowed. No cut down automotive rear ends.

16. Full metal side shields to cover engine area minimum 16 gauge steel or 14 gauge aluminum.

17. Must run 5/16" cable around oil pan over top of valve cover in a complete circle connected with (2) cable clamps.

18. Must run billet steel flywheel.

19. Clutch assembly and flywheel must be surrounded 360 degrees with 1/8" steel or 3/16" aluminum. This is also to include cast iron front balancer pulleys. SFI approved front dampers need not be shielded.

20. 1100 & 1150 lbs. weight classes

21. Kill switch device mounted on rear of tractor must disconnect power to electric fuel pump along with activating turbo guillotine.

22. Helmet face shield or goggles required. Gloves are recommended.

23. No belt driven cooling fans. Electric fans only.

24. intercoolers and ice boxes are not permitted.

25. All NQS rules not in conflict with these apply.

NQS Pulling
NATIONAL QUARTER SCALE PULLING

www.NQSpulling.org

Track & Pull Notes

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